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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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NEW STEAMSHIPS.

(Consular report.)

The Grosser Kurfuerst, built by F. Schiban, of Danzig, for the North German Lloyd, has a length of 585 feet, a breadth of 62 feet, and a registered tonnage of 13,200 feet. Her two quadruple engines develop 10,000 horse-power, and her speed is 17 miles an hour. Special attention has been devoted to the quarters for other than first-class passengers.

The steamships Minneapolis and Minnehaha, of the American Transport Co., have been built, and two more steamers of precisely the same dimensions—600 feet between perpendiculars, 630 feet over all, 65 5 feet beam, and 39.7 feet depth—are being built especially for the transportation of first-class passengers between London and New York, carrying no second-class or steerage passengers. They are said to be the largest vessels, with the exception of the Great Eastern, ever seen in the Thames.

The following, dated May 3, 1900, has also been received from Mr. Hill, consul at Amsterdam:

The new ships of the Cunard Line—the Ivernia, which was built at Wallsend-on-Tyne by Messrs. Swan & Hunter, and the Saxonia, which has just been turned over to the owners at Liverpool by Messrs. John Brown & Co., of Clydebank Works, Glasgow—are among the largest afloat.

The length of the Saxonia is 580 feet between perpendiculars or 600 feet over all, her greatest width 64 feet 4 inches, and her depth to the shelter deck 49 feet 4 inches. Above the shelter deck, which corresponds to the upper deck of many vessels, there are three more decks—the promenade deck, on which is the first-class accommodation; the boat deck, where eighteen boats are carried; and the navigation deck. Below the shelter deck there are the upper, lower, main, and orlop decks. From the top of the wheelhouse on the navigation deck to the water is a vertical distance of 65 feet when the ship is loaded to a depth of 29 feet draft, the measurement from that point to the keel being 94 feet, and from the keel to the top of the funnel 145 feet. The hull is made of a number of water-tight compartments, divided by bulkheads reaching to the upper deck, and a double bottom runs the entire length of the ship, and, together with some other tanks, supplies 4,750 tons of water ballast.

The gross register of the Saxonia is 13,988 tons, her cargo capacity is 800,000 cubic feet or 20,000 tons measurement, and her weight fully loaded is about 25,000 tons. As a troopship, she can carry 200 officers, 3,500 troops, and 10,000 tons of stores; as a cavalry ship, she can convey 200 officers, 1,000 horses, and 1,000 men; and as a horse transport, she has accommodation for 1,900 horses and 400 troops. Her bunkers and reserve bunkers are of sufficient capacity for a supply of coal for forty days' steaming at 15 knots. She will carry as a regular liner 150 to 200 first-class passengers, the same number of second class, and from 1,700 to 2,000 third class. These last are placed in airy cabins provided with water and basins; they sleep in bunks arranged in two tiers only; excellent baths and lavatories are said to be at their disposal; their food is served in saloons, with fixed tables and cushioned seats; space is provided between decks for promenade; and the men have a smoking room and the women a boudoir containing a piano. Nevertheless. steerage rates are lower than formerly.

The ship has two screws driven by two sets of quadruple-expansion engines, which are balanced on the Yarrow, Schlick & Tweedy system. Steam for the main engines is supplied by nine boilers. Howden's system of forced draft is in use. Using forced draft, the engines on the trial trip indicated 11,400 horse-power, and the mean speed realized was 16.6 knots, due allowance being made for the tide, etc. Under natural draft, the horse-power was about 10,000 and the mean speed 15.8 knots.

Under date of May 9, Mr. Hill adds:

The new steamer Koning Willem II, of the Netherlands Steamship Co., of this city, was built by the Fyenoord establishment, is 392 feet long, 45 feet broad, and 29 feet deep. The engines are of the quadruple-expansion system. The boat can carry 72 first-class and 40 second class passengers, besides from 100 to 150 soldiers, and her loading capacity is 4,000 tons. The estimated speed will be 14 miles per hour

TONNAGE TAX.

Tonnage tax collections during the fiscal year ended June 30, 1900, amounted to $890,482 compared with $834,087 for the previous fiscal year. The collections are the largest for any year since 1884 when these taxes were reduced to rates below those charged by the principal European nations. American vessels paid $68,640 during the year. The penal tonnage taxes on vessels not in treaty with the United States. were unusually large, $36,712, as these charges were necessarily imposed on Cuban vessels, until Congress granted relief by the act of February 10. The excess charges on Cuban vessels have been or will be refunded under that Act. By the Hawaiian Territorial Act vessels in trade between Hawaii and the rest of the United States since June 14 are exempt from tonnage taxes. Average annual receipts of about $9,000 will thus disappear hereafter. Collections at Honolulu and subports for two weeks in June, however, on vessels from foreign ports amounted to $1,241. Congress also exempted trade between Porto Rico and the United States from tonnage taxes.

AN interesting engineering feat which has recently been accomplished is the placing of a steamboat of 550 tons on Lake Titicaca, between Bolivia and Peru, a sheet of water 120 miles long, 325 miles from a seaport, and nearly 13,000 feet above sea level. This vessel was built at Leven shipyard, Dumbarton, Scotland, temporarily put together, and then transported in sections to Mollendo, whence it was carried in 22 cars up the railroad which skirts the steep side of the Andes to the lake side. There it was once more put together and the boilers and engines installed. The Coya, as the vessel is named, is 170 feet long, 26 feet beam, and has accomodation for 45 first-class and 40 second-class passegers. The distance travesed by this steamer is 100 miles, the journey occupying ten hours. The vessel serves as a means of communication between the Republics of Bolivia and Peru.

LUMBER IMPORTS.

In the face of a tariff on lumber the imports into the United States last year were heavy. These indicate the enormous demand for lumber in this country. The imports for 1899 of lumber amounted to $7,005,101. The importations from Canada were 673,622,000 feet, valued at $6,990,175; against 348,876,000 feet, valued at $3,464,718 in 1898, and 674,851,000 feet, valued at $6,759,376, in 1897. It will thus be seen that the importations of lumber by the United States last year were almost as great in feet and considerably greater in value than in 1897, during more than half of which year lumber was on the free list, and there were heavy importations in anticipation of the imposition of the duty. The shingles imported by the United States last year were 545,484,000, valued as $999,862, against a valuation of $830,298 in 1898 and $414,222 in 1897.

AMERICAN STEAMSHIP LINE BETWEEN TAHITI AND SAN FRANCISCO.

During the extraordinary session of the general council of this colony, which was convened yesterday for the purpose, a contract was awarded to the Oceanic Steamship Co., of San Francisco, for the establishment of a steamship line between Tahiti and San Francisco for the transportation of mails, passengers, and freight.

The essential features of the contract are as follows: For the annual sum of 156,000 francs ($30,000 in United States gold) to be paid by the Tahiti government and exemption from port charges, the Oceanic Steamship Co. is to operate an American steamship of about 3,000 tons gross register, performing eleven round trips per annum at an average speed of not less than 13½ knots. The contract is awarded for a period of five years from the first voyage, which is to be made not later than November 1, 1900, and earlier if possible.

It is the purpose of this company to use a first-class passenger steamship and to make the service attractive in all particulars, and it is anticipated that this will become a favorite route of travel when the charm of the climate and scenery of Tahiti becomes known.

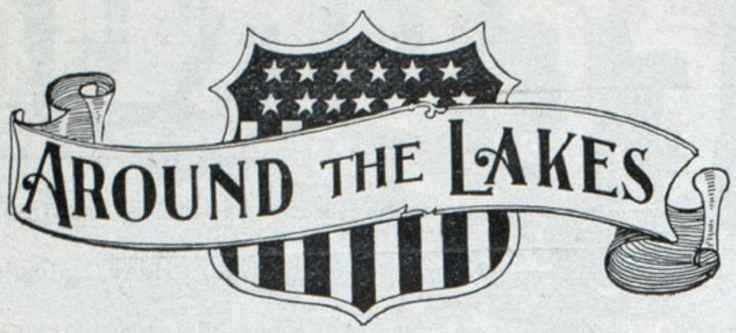
The inauguration of this line will give great impetus to United States trade with Tahiti, and in general, with other islands of eastern Polynesia. The Pacific coast of the United States will be particularly benefited, as perishable goods—such as fruits, vegetables, and meats—which now are received exclusively from New Zealand, will then come from San Francisco.

For over thirty-four years, a regular monthly sailing-vessel service has been maintained between Tahiti and San Francisco. This direct means of communication developed a trade insignificant at first, but amounting some ten years ago to over 50 per cent. of the entire business of this colony. Since then, the proportion of trade has remained about the same, notwithstanding the establishment of the steam line to New Zealand and the fact that the sailing vessels are entirely inadequate as a means of transportation between this port and San Francisco.

It may be predicted that if the Oceanic Steamship Co. continues in this business for five years, the trade between the United States and Tahiti will not only experience a great extension, but that proportion of value will increase from 50 to 75 per cent.

The Union Steamship Co. (British), of New Zealand, which now operates a steamer between Tahiti and Auckland, has for some time past desired to extend its service through to San Francisco; and, indeed, at this moment, it has a proposition before the local government offering to perform the service for an annual subsidy of $50,000. J. LAMB DOTY,

Tahiti, March 10, 1900. Consul,



DETROIT.

Special Correspondence to the Marine Record.

The McMorran Wrecking Co. has secured the contract for raising the schooner H. W. Sage, sunk at Harsen's Island.

Comdr. J. C. Wilson, U. S. N., who has taken over the duty of L. H. Inspector for the 11th district, will probably remain until next spring, his headquarters being U. S. Public Building, Detroit.

Capt. Anthony T. May, owner of the sunken schooner J. S. Richards, has no plans for raising his boat from the channel off Walkerville. The underwriters of the cargo have done nothing as yet.

The new steel steamer now in course of construction at the Jenks shipyard at Port Huron will soon be completed. The vessel will be named Capt. Thomas Wilson, and will be the property of the Wilson Transit Co., of Cleveland.

Maj. G. A. Marr, superintendent of Portage Lake waterways, announces that the speed limit on vessels in Portage river has been removed. The revetments are completed and vessels may go through at full speed. The limit is still maintained in the upper ship canal, where work is going on.

The new light at Point Pelee will be put up on the middle-ground in 14 feet of water and will be of stone at the base with a steel tower, fireproof throughout. A crib of piles will surround the stone base as a protection against ice and seas. The light will be a modern one of high power and a siren will also be installed. Work will be completed next spring.

Passed Assistant Surgeon E. K. Sprague, of the Marine Hospital Service, has arrived here and reported to Surgeon Godfrey for duty. Dr. Sprague has been stationed at the United States consulate at Antwerp, Belgium, for some time. He is known as one of the best bacteriologists in America, and was at the hygienic laboratory in Washington prior to his being sent to Belgium.

August 20 is the date of the Citizens' Yachting Association regatta for the Pingree cup. This trophy has been up several years and must be won three times to belong to any yacht permanently. The City of the Straits and the Shamrock have each won it twice, and the Viking, of Toledo, has a third title to it. Both the Viking and the City are expected to be on hand this year, and there is much speculation as to the City's chance of winning the cup for the third time.

A recent treasury decision holds that pleasure yachts of five tons or more must report at the customs house after all trips to foreign countries. This especially applies to small yachts on the connecting waters of the Great Lakes, and on the Detroit river in particular. A yacht must clear to go to any Canadian port, and upon returning to this side must at once make entry as returning from a foreign port. The law has heretofore been interpreted with leniency, and yachtsmen have made a practice of running over to Wolfe's and other resorts without troubling the customs office. The new ruling will hold them to stricter account.

The schooner Kingfisher, in tow of the steamer Samuel Marshall, coilided, on Monday, with the wreck of the schooner Fontana, which lies in the channel of Fort Gratiot. The Fontana's foremast was carried away by the Kingfisher and other damage was done. The stern of the Fontana lies almost in the middle of the river. Wrecking masters from Detroit and Port Huron are practically agreed that they do not want the job of raising her, and, by reason of her location, she can hardly be raised except, perhaps, with pontoons. She lies just at the entrance to the rapids, a little to the Canadian side of the center of the channel and some 200 feet below the light-house. Boats steering on the ranges will hit her. Boats having tows coming down stream are in constant danger of being thrown upon the wreck.

Detroit's exports for July amounted to $1,817,154, divided as follows: To Belgium, $36,812; Germany, $16,007; England, $712,544; Scotland, $76,433; Ireland, $5,753; Nova Scotia and New Brunswick, $41,844; Quebec and Ontario, $879,469; British Columbia, $25,063; Japan, $264; Australia, $20,961. Of this steam cars and land vehicles carried away $1,610,469 worth. The rest was carried in vessels, of which the bulk were American. Canada our best customer, took $80,000 worth of farming implements, $111,900 worth of horses, $42,181 worth of corn, over $100,000 worth of cotton goods, nearly $100,000 worth of iron and steel, also lumber worth $50,000, and other commodities in like proportion. England took most of her exports in animal products: $35,000 worth of beef; bacon, $112,266; hams, $276,053; pickeled pork, $50,000; lard, $53,000, and "oleo" $11,655. Seeds, liquors and tobacco had practically no sale. The total is heavier than previous months; and beats July, 1899, by a large margin.

Six months ago, says a Duluth dispatch, an iron mine was about as valuable a thing as a man could own. Everybody who could was getting hold of a piece of iron land on a lease or in any way possible, and anything that had a showing of iron on it was in good demand. The large iron interests were buying everything they could get. The iron ranges were covered with exploration parties. Every diamond drill in this section was at work and it was difficult to get work done except after much delay. To-day all the exploring parties are pulling off and the demand for properties is falling off. The big iron companies are said to be giving it out that they have got all the properties they want now and even more, and that they are not in the market for any more. The result is that those who have taken leases with the idea of developing the properties and selling them to the iron companies are themselves in a fair way to find no market for the properties which they are opening up and many of them will be dropped.

Four steamers got into a mix up off Ecorse in Detroit river this week that will cost many thousands of dollars. The accident caused a blockade in the channel and at one time there were 16 boats held up around Grassy Island. The Bessemer steamer James Watt was bound down, loaded. She passed the Lehigh Valley Co's. freighter Tacoma, and just as she went by the latter touched her stern, causing the Watt to sheer towards the Canadian side of the channel. Here was the Minnesota Steamship Co's. steamer Maruba towing the Manda. The Watt had signaled to pass to port, and the Maruba had accepted the order. Just as the Watt sheered over the Maruba came up and caught the full force of the Bessemer boat's momentum. The blow was glancing or the Maruba would have been badly damaged. As it was, the Watt's bow punched a hole in the Maruba's port side amidships, making an opening six feet wide by ten feet long, all fortunately above the water line. There was no loss of life, and, with the cost of repairs, also the detention while making same, the causualty won't amount to so much as at first anticipated.

It is voted here that the working of the new steamer Simon J. Murphy of the Eddy-Shaw fleet, on her first round trip was pleasing to both builders and owners. The Murphy left Detroit late in July for Duluth, light. At Duluth she loaded 247,000 bushels of wheat, a gross tonnage of 7,410 actual weight, and a net tonnage, government measure, of 6,616. She sailed from Duluth to Buffalo, unloaded and returned to Detroit, the amount of coal consumed in the trip of 2,000 miles being 190 tons. Her traveling time was 166 hours, an average of 12 miles an hour for the round trip. She carried the load on the mean draft of 17 feet 10 inches and her machinery worked to perfection. Comparing her coal consumption with that of the Senator, launched in 1896 from the Detroit yards, the figures show a great advancement in economy. The Senator is 410 feet over all, has 45-feet beam and is rated with a gross tonnage of 4,048. To the close of last season she made 69 trips between Buffalo and Duluth and had averaged 180 tons of coal for each round trip, just 10 tons less per trip than the Murphy, which has a capacity of nearly 2,500 tons beyond that of the Senator.

TOLEDO.

Special Correspondence to The Marine Record.

The yacht Viking left for Detroit this week with the following party aboard: Capt. Bert Bortree, Henry Huffner, Jack Newton, Harry Helmer and Art Salm.

The government work above the Fasset street bridge is progressing. The short haul of scows loaded with mud now dumped abreast of Wilcox's and the Marine building, is a great help in the work of getting the mud from the dredge away rapidly.

At Gilmore's shipyard, the tug Uncle Sam is being rebuilt. The schooner Maumee Valley is on the drydock to be calked, bottom and top sides. The sand barge Commerce will go on the dock in a day or two to be calked, and the tug Shelly will have her repairs made.

The Rabbitt & Sons Company will begin driving piles abreast of the Marine building, foot of Jefferson street, next week. This will prevent boats from landing at the old wharf from Adams street to the Traction Company's building near Monroe street, with the exception of foot of Madison street at J. N. Dewey & Co. s and foot of Jefferson street.

Mr. Charles Lance, whose son, Lewis W. Lance, assistant engineer, became ill on the steamer Merida and died in a Duluth hospital, has received a letter from Capt. Ivers, of the Merida. The first Capt. Ivers knew of Lance's death was when he received a letter from his father. Mr. Lance wishes to thank the Marine Engineers and other marine men of Duluth, and Mrs. Eugene Passono, wife of engineer Passono, as well as the many Toledo friends, for kindness shown while his son was ill and also after he died.

The Up-River Yacht Club, at its meeting held recently, decided to postpone the race until August 19. This is to be one of the regular series of races for the Brown trophy and point flags. In order to give added interest to the regatta, it is proposed to give special prizes in each class. A special invitation was received from the local committee of the National Union to participate in a sailing regatta to be held off Walbridge park August 16. So far as they are able to do so, the boats of the club will participate in that event. The regular meeting of the club next Friday evening will be of unusual importance and every member is urged to be present.

DULUTH—SUPERIOR.

Special Correspondence to The Marine Record.

Inspector Norman B. Conger of the Weather Bureau has wired the White Line Transportation Co. to reserve berths for a party of six for Rock Harbor, Isle Royal.

Wheat charters went to 1½ cents here this week with light chartering. It is thought that towards the end week shipping will be very brisk at the above-name.

To the first of this month 214,000 tons of coal reached the head of the lakes from Buffalo. This is only exceeded by Chicago, although Milwaukee reaches close up with her import of 202,000 tons.

The steam yacht Wacouta will remain on Lake Superior for about a month, and it is reported that at the end of that time she will return to the Atlantic with James J. Hill and family on board for a cruise to the West Indies.

Henry Nelson, agent at Duluth for the Lake Seamen's Union, is hustling day and night in the interest of his union. He is securing a number of new members and has furnished employment for a number of men who desired to ship with boats who were short of men. This week the sailors on the yacht Waconta joined the union.

By the bursting of a steam pipe on the steam yacht Wacouta on Lake Superior this week two firemen were killed. They were standing near when the explosion occurred, and both were scalded to death. The Wacouta is a large ocean going steam yacht, and was recently purchased and brought to the lakes by James J. Hill, president of the Great Northern railroad.

The steamer Theano of the Algoma Central Railway Steamship Line recently passed down through the Canadian canal at Sault Ste. Marie, Ont., with the first cargo of iron ore ever shipped from the Canadian shore of Lake Superior. She had 2,153 tons, and was bound for Midland. From this out it is expected to ship three or four cargoes per week to the same place.

The fine of $100 which was imposed on Captain J. J. Hartman, of the steamer North West, for running too fast through the St. Mary river about July 18, has been reduced to $15 by the government authorities. It was Hartman's first trip on the steamer and his first offense, in view of which the Treasury Department made the reduction stated. The government rules require vessels over 100 tons to not exceed 9 miles an hour when traveling on the river.

A sand wheel of very large size for the Calumet & Hecla Copper Mining Company is now being constructed at Woodbury, N. Y. The wheel is to be 65 feet in diameter and will weigh more than 500 tons. It will have a face of 30 feet width and revolve upon an axle 5 feet in diameter. Attached to the wheel will be a number of buckets to carry water and sand out of the mines. The wheel will, of course, be constructed segmentally, and it will be assembled in a pit dug into the ground.

The Carnegie Steel Company has taken a contract to supply the Russian government with 1,000 tons of armor plate at $560 per ton. The delivery must be made within a period of 14 months. This plate is to go on ships of the Russian navy to displace old compound armor on the vital parts, which no longer meets the requirements of modern war ordnance. The requisition includes turret and side armor of the newest Kruppized product. The plates will range from 4 to 11 inches in thickness.

The report is floating around here to the effect that the birth of a babe on the steamship North Land on her last trip to Duluth recalls the early offer of the Nothern Steamship Company of $500 as a present to any baby that might happen to be born upon either of the big white boats. This is the first time in the history of this line that a birth has occured on the line, and the question now arises whether this promise on the part of the steamship company is still in force, if indeed it was ever promised.

The iron ore shipments from Minnesota to August 1, this year, show an increase over the shipments for the corresponding period last year of 1,425,794 gross tons, which is regarded as a very heavy increase for the first three full months of the season, together with the movement for the latter part of April. There has been some talk that the shipments for the season, which had been estimated early in the spring at 20,000,000 tons, would be curtailed. It now looks as if the season shipments will come up to the total mentioned in the early part of the year.

President J. J. Hill's scheme for a big steamship line to the Orient seems to have taken shape in articles of incorporation filed with the Secretary of State by the Great Northern Steamship Co., with a capital stock of $6,000,000. The purpose of the company is stated to be the building and operating of steamships on the high seas and other navigable waters. The incorporators are James J. Hill, D. Miller, W. P. Clough, M. D. Grover and A. W. Clark, all officials of the Great Northern Railway Co. The officers are not named, but the date of the first annual meeting is fixed for February 1, in St. Paul, which will be the headquarters of the company. The capital stock is divided into 60,000 shares of $100 each. The filing fee was over $3,000. The Hill system at present includes the lake steamship line between Buffalo and Duluth and the transcontinental railroad. The new company will extend its business to the Orient.

CHICAGO.

Special Correspondence to The Marine Record.

Coal receipts from Buffalo last week aggregated 20,000 tons. Up to August 1, 342,000 tons had been received.

A lift bridge at South Halsted street was lowered onto schooner Ida as the vessel was being towed down the river on Monday night. The foretopmast was carried away and that took out the jibboom as well.

Capt. William Smith, of the tug Perfection, who struck Robert Marshall, a deck hand on the boat, over the head with an ax at Racine several weeks ago, will be tried before a committee of the local lodge of the Licensed Tugmen's Protective Association.

Receipts of anthracite coal by lake at Chicago from July 1 to July 20, 1900, according to the bureau of coal statistics, show a small increase as compared with the same period last year; all-rail receipts also show an increase, but shipments from Chicago have decreased considerably—over 500 cars—and for the year the falling off in tonnage is quite large, almost 2,500 cars.

The project for a line of palace passenger steamers between Chicago and Buffalo has fallen through. It was asserted a few weeks ago that contracts for building two of the craft, to cost, complete, $1,000,000 each, had actually been let, and that the work upon them would immediately begin. It is learned from the American Ship Building Co. that no contracts had been entered into.

After running along steadily at 2 cents for several weeks grain rates broke to 1¾ cents this week. A big business was done at the decline. It was claimed over 1,500,000 bushels was placed for shipment, the Lehigh Valley alone being credited with 500,000. All the lines filled up for several days to come. The Milwaukee grain rate also took a tumble this week and corn was placed at 1¾ cents to Buffalo.

The Isaac Elwood was chartered on Tuesday for 270,000 bushels of wheat from South Chicago to Buffalo. Bartlett, Frazier & Co. are the shippers. This makes a cargo of 8,100 tons, by far the largest ever carried from Chicago. It is but a few years ago when cargoes of 100,000 bushels of corn excited wide comment as breaking all records. The Elwood is one of the 500-foot steamers turned out this season by the American Ship Building Co. for the wire trust.

Winthrop Harbor, the new factory town and summer resort which is becoming prominent on account of its ample transportation facilities, practical and profitable factory sites and beautiful residence locations, is situated on the shore of Lake Michigan in Lake county, in the extreme northeast corner of Illinois. It is 44 miles north of Chicago, 41 miles south of Milwaukee, and adjoining the Wisconsin state line to the south. It lies midway between Waukegan, Ill., and Kenosha, Wis.

R. B. Wilcox, city harbor engineer of Chicago, has ordered the removal of dismantled hulks of old wooden vessels from the channel of the Chicago river where they have been left to decay. The north branch of the river has been for years a dumping ground for abandoned boats, and in order to proceed with channel-widening operations it has been found necessary to institute suits against their owners. Among the vessels affected are the New Era, the Fire Roofer, the Hazel D. and the Radical.

"The newspaper stories about the danger of the Chicago river for the big boats are not exaggerated," said Capt. D. A. Kiah, of the Rutland steamer F. H. Prince. "Before the canal was opened we were able to get in and out of Chicago port at a cost of $40 to $60 for tugs. Since the canal was opened we are sure of $110, and consider ourselves lucky if we escape with less than $120 for tows. Of course with the largest boats the expense is comparatively higher as they must use more tugs."

The master of a schooner here is growling because there is no government inspection provided for small sailing vessels, and he predicts a heavy loss of life this fall. The captain's views may be, and no doubt are, all correct, but there is such a thing as too much government inspection, red tape and officialism as may be found out later. There is no more reason to look for loss of life this fall than ever before. It is unwise for any shipmaster to state that a class of vessels are unseaworthy and liable to founder in any heavy weather.

Of course Detroit is slower than Chicago even in measured mile distances, to say nothing of politics and harmony. Our people bought the Darius Cole, an easy sixteen-miler around Detroit, but even her boilers wouldn't work when she got around here. The next step was to secure the twenty-miler Mary, and she also has turned out a complete fiasco. They must count down-stream speed at Detroit, and credit their boats with several miles per hour more than they can make in still water. The Mary and Darius Cole are almost failures around here.

The Chicago Pneumatic Tool Co. has engaged Mr. Fred. F. Bennett as sales agent and manager of advertising, with headquarters at the main office of the company, Monadnock block, Chicago. Mr. Bennett resigned a position as sales agent for the American Steel Casting Co. and American Coupler Co., of Chester, Pa., the change taking effect July 1. Mr. Bennett seems to be peculiarly adapted to his present position. His apprenticeship of several years was served on the Chicago daily papers as reporter and city editor, and later he was city editor of the Omaha Republican. Subsequent to this he was for many years western representative of the Railroad Gazette, of New York. His long experience in the journalistic field, his railroad acquaintance, combined with his thorough knowledge of trade publications, should make him a valuable acquisition to the staff of this company, and they are to be congratulated on securing his services in a department of their work for which he seems peculiarly adapted.

Last week a party composed of members of the River Improvement Association, the drainage canal, representatives of the coal trade having dock interests, vesselmen and elevator companies conveyed Major J. H. Willard, U. S. Engineer, over the south branch of the Chicago river on the tug Morford, and discussed with him schemes for two winding basins which are much needed to aid large boats. Land, coal docks and elevators will, in the course of time—inside of three years—have to be condemned and buildings razed to straighten the river and Major Willard stated that he was very much in sympathy with the proposed improvements. The party included the following persons: Major Willard, U. S. Engineer; George Merryweather, Geo. E. Adams, L. O. Goddard, Murry Nelson, Jas. B. Galloway, G. G. Tunell, J. S. and R. J. Dunham, members River Improvement Association; J. G. Keith, Lake Carriers' Association; T. T. Morford, Henry B. Ford, George Williams, James Mowatt, J. R. Sinclair, J. A. Calbick, J. F. Moore, W. F. Higgie, for the marine interests; George J. Brine, George Marcy, representing elevators; C. L. Dering, J. H. Brown, J. B. Brown, William M. Connery, Norman S. Birkland, Charles Leland and Charles B. Cone, representing the coal interests; John Spry, lumber; William Boldenweck and Isham Randolph, sanitary district. The trip was satisfactory from the standpoint of improvements contemplated.

BUFFALO.

Special Correspondence to the Marine Record.

Capt. M. J. Cummings, Oswego, has returned home, after a tour of several months in Europe, including a visit to the Paris exposition.

Freight rates ruled at 40 cents this week to Chicago, Milwaukee, Sheboygan and other west shore ports, also to Houghton. Duluth, Gladstone, etc., 35 cents. Last July 370,000 tons was shipped, but this year's record shows upwards of 100,000 tons less.

At a recent meeting of the Holland Torpedo Boat Co., held in New York, it was decided to accept the bid of Lewis Nixon for five submarine Holland torpedo boats. This work will be taken in hand at once, and these boats, it is expected, will be ready for experimental tests some time next summer.

The total Buffalo appropriation authorized up to date is $4,369,000 and the total appropriation and authorization will run over $5,000,000. The total appropriation and authorization for the Cleveland harbor up to date has only been about $3,000,000, of which Congressman Burton secured $1,354,000 in one lump.

The tug Wm. H. Gratwick, which capsized in the Niagara river about three weeks ago, while towing the barge Eleanor up the channel, is in service again. A coincidence is the fact that the steamer Canisteo arrived in port the same day with her tow, and the first work of the Gratwick was again to tow the barge Eleanor to her dock.

Those interested in gas engines will find an interesting catalogue on this subject issued by the Noye Manufacturing Co., Buffalo, describing the Niagara motor. This is a two-cycle motor, with a number of illustrations showing its application to launches of various sizes. The text describes the features of the engine, such as reversing, method of ignition, etc.

Recent Berlin advices say that Dr. Wiegard, of the North German Lloyd Steamship Co., had this to say about the recent fire: "The official report of our New York inspector, Capt. Moeller, who is absolutely trustworthy, denies emphatically that there was any incorrect behavior on the part of New York harbor tugs at the time of the Hoboken fire. On the contrary, the captains of the tugs did precisely what Capt. Moeller asked them to do."

The Congressional Rivers and Harbor Committee, were here, the guests of the Lake Carriers' Association and Buffalo Merchants' Exchange on Monday. They inspected the harbor and breakwater improvements, after which the visitors enjoyed a trip to Niagara Falls and Dufferin park. In the evening an informal banquet was served at the Iroquois hotel. Chairman Burton of the Rivers and Harbors Committee, expressed his personal satisfaction with the manner in which large appropriations have been expended in Buffalo and commended the manner in which the plans of Major Thomas W. Symons, United States Engineer at this port, had been executed.

The new steamer Ottawa, built at the shipyards of the Bertram Engine Works Co., Toronto, for the Canada Atlantic Transit Co., made her trial trip on Monday. The Ottawa is 257 feet over all, 43 feet beam, 25 feet 6 inches deep, and will carry over 70,000 bushels of wheat on the canal draught of 14 feet. She is constructed with cargo ports, a complete package freight steel deck, and with hoisting arrangements. She is the largest steamer ever built on Lake Ontario. In her construction steel is employed everywhere, even as a substitute for wood in her cabins. The officers of the Ottawa are Capt. Birnie; chief engineer J. Booth, first mate, A. Birnie, Jr.

THE steel steamer James Watt recently in collision with the Maruba has been docked and surveyed. She will be given a new stern, 24 shell plates, 22 deck plates, 9 beams, new sheathing on forecastle deck, 6 stringer angles and other minor repairs as well as some new equipment.

KINGSTON, ONT.

Special Correspondence to The Marine Record.

The M. T. Co., handled 250,000 bushels of grain within a week, lately.

The labor organizations of the city will hold a mammoth celebration on Sept. 5th.

The steamer Rosedale, from Chicago on Friday, unloaded 65,000 bushels of grain here.

The Donnelly Wrecking Co. shipped diving apparatus to Canebick, on Wednesday last.

A secret signal corps, supported partially by government aid, is likely to be established here.

The steamer Ridean Queen broke her wheel when near Westport. On Wednesday she was dry docked here and received a new one.

Corsitt Bros.' large foundry may remove from Brackville, on account of the poor fire protection afforded. Kingston offers the company inducements to settle here.

The steamer Nicholas and two barges loaded stone off the Penitentiary wharf on Tuesday. It was taken to Cape Vincent to be used in the construction of a breakwater being built there.

Organizer Flett, of Toronto, is in the city, to add to the labor unions in the city. An attempt will be made to organize longshoremen's, cotton and woolen mill employees' unions, etc. Mr. Flett addressed meetings on Thursday and Friday nights, and will speak at several gatherings to be held shortly.

It has been suggested that the city station a life boat on the Rockwood dock. It certainly is a most convenient place, as nearly all of the accidents occur during heavy west winds, and the number of persons saved here is so large. During the summer and fall someone is always on the look-out on the dock, and very few upsets go unobserved.

The Carnegie Steel Co. has written to Capt. Donnelly, inspector of Inland Lloyds, making inquiries as to the success of deep-laden vessels passing through the new fourteen-foot canals in the St. Lawrence. They intended using the canals more than they have been doing, should it be found that heavily-laden vessels can travel through them in safety. Capt. Donnelly sees no reason why the new system will not be a success.

When Capt. Gaskin, of the Montreal Transportation Co., and Secretary MacDonald were at Charlotte, the early part of this week, they accidently entered a teachers' meeting. To the captain's surprise, he was, a few minutes later, asked to speak, being introduced as Com. Gaskin, ex-mayor of Kingston, one of Canada's most prominent educational centers. He was amazed, but proved equal to the occasion, notwithstanding that he wore his buck boots and knickers. He would not be surprised if he was asked to preach next.

CLEVELAND.

Special Correspondence to The Marine Record.

There are a number of contracts for new tonnage being figured on, and as soon as the price of material gets back to a fair price shipbnilding will be rushed.

The schooner Sophia Minch, after being a year on the beach near Ashtabula, has been put in good condition and cleared from this port with a cargo of coal.

Lake Michigan coal tonnage is in fair demand at 35 cents but wild cargoes are scarce for other ports and not much business was being done during the early part of the week.

Excursion parties for lake trips are now all the go and everyone that can get away from business for an hour or two to a week or two, figures on a lake ride. The near-by summer resorts are being extensively patronized.

Mr. Robert Curr surveyed and will superintend all repairs made on the Bessemer line steamer James Watt. Mr. Curr has been out of the city for the past month or two superintending the construction of vessels at Chicago and Duluth.

The steamer C. B. Lockwood which struck at Limekiln Crossing last week in avoiding a collision with the Canadian schooner Breck came here from Lorain and was placed in drydock. It will take all week to complete repairs on her.

Capt. Corrigan is still searching after the bodies of his two daughters lost through the foundering of the yacht Idler. Vessels should keep a sharp look-out when along the south shore of Lake Erie and not fail to pick up any bodies found floating. Those visiting the beach, would also do well to be observant, and, in the event of any bodies being sighted, to wire Capt. James Corrigan of this city immediately.

"We are doing considerable work right now in the Cleveland harbor," said Col. Smith. "We are rebuilding the piers at the mouth of the river, rebuilding the west breakwater, extending the east breakwater to Muirson street, and dredging the harbor. These improvements require a vast amount of money, but they are very necessary. Two additional improvements are badly needed and should be cared for by Congress. One is the extension of the east breakwater at least another mile, and the other is the removal of the entrance to the harbor farther out into the lake. The entrance is in too shallow water, and the Cleveland harbor is one of the most difficult to enter of any on the lakes. The entrance should be moved farther out so that it will be located in thirty feet of water. These two needs will be fully explained to the Congressional committees.

POLLUTING EFFECT OF THE CHICAGO DRAINAGE CANAL.

The Illinois State Board of Health has published advanced notes on the sanitary investigations of the Illinois river and its tributaries, undertaken to determine the effect of Chicago sewage on the Desplaines and Illinois rivers before and after the opening of the Chicago drainage canal. Previous to the opening of the drainage canal a considerable portion of the sewage was pumped from the Chicago river at Bridgeport and discharged into the Illinois and Michigan canal, whence it eventually found its way into the Illinois river. In the report of the board it is estimated that the sewage draining into the Chicago drainage canal carries about 240 tons of dry organic matter daily. To determine the extent of the pollution of the Illinois river at its mouth due to the pollution of the canal water at its source, 320 miles distant, is conceded to be a complicated problem, but certain statements are made throwing light upon the situation which would seem worthy of notice. From careful investigation it has been found that the canal water forms only about 14.4 per cent. of the flow in the Illinois river at its mouth, at Grafton, Ill., where it empties into the Mississippi. What is known as the purification of a flowing stream is the actual destruction, by oxidation, of organic matter or the conversion of it into matter of a harmless type. It also includes the destruction of certain living vegetable forms, which are destroyed mainly by the disappearance of certain kinds of organic matter. The measure of the disappearance or alteration of organic matter is taken by changes in the observed oxygen absorption and the contents of albuminoid ammonia. According to the report it is found that the organic matter is largely oxidyzed and destroyed before it reaches the mouth of the Illinois river. As a matter of fact the water of the Illinois river at its mouth is found to be less contaminated than that of the Mississippi, and it is also found to be in better organic condition than are most of its tributaries. The investigation discloses that the contamination from cattle feeding and the discharged distillery slops at Peoria is enormous, the amount of waste nitrogen here being practically equal to that which is discharged into the drainage canal at Chicago. The filth from the Peoria cattle sheds is said to present a condition resembling that in the stock yards branch of the Chicago river, and the contamination from this source (Peoria) is held to be the main factor in the animal polution of the lower river.

SHIPPING ON THE GREAT LAKES.

In estimating the position of American shipping and shipbuilding the importance of these industries on the Great Lakes is very often overlooked. The volume of business carried on these great inland seas of the United States and Canada is annually increasing and for the year 1900 promises to exceed that of any previous year. This trade is of great importance not only to the United States and Canada but also to Great Britain, Germany and the other continental nations for it is leading to a great development of the canal system which is enabling ships of considerable size to pass to the Atlantic shores and from thence across the ocean to Europe. In 1899 Chicago shipped by rail and lake no less than 221,972,000 bushels of grain and 5,421,000 barrels of flour, and of this only about 12 per cent. was shipped from Canadian ports, but with the opening of the improved Welland canal giving a direct passage to the Atlantic for vessels of about 1,500 tons it is expected that an increased quantity of grain will be shipped to Montreal and there loaded on larger vessels, and it is also thought possible that vessels may find it profitable to carry merchandise direct to lake ports and return to Europe loaded with grain and flour. The Canadian ports are now in a position to offer rates competing with the Erie canal to New York and this is shown by the agitation now carried on headed by the governor of New York, Mr Roosevelt, for the expenditure of the enormous sum of $60,000,000 in enlarging and improving the canal from Buffalo to New York to enable large barges to run from the lake ports to New York and trans-ship their freight direct to ocean vessels on the plea that unless this is done New York runs the risk of loosing her grain trade. This canal is intended to be made to accommodate the large barges and to be worked by electricity generated at Niagara. There are so many ports on the American shores of the lakes having a large trade with other ports of the same class and an export trade with Canada and indirectly with Europe that the entrances amount to an enormous total. The problem before the European ship-owner and especially the British ship-owner is whether he can with a vessel drawing 14 feet of water compete with the large American Erie canal freighters and with the railways by bringing merchandise direct from ports in Europe direct to Chicago and other lake ports and return laden with grain. The following table gives the number and tonnage of vessels owned on the lakes January 1 of the present year:

PORT	Number of Vessels	TONS
Chicago	284	64,295
Detroit	.....	149,050
Erie	.....	34,478
Cleveland	326	336,769
Grand Haven	.....	43,797
Buffalo	226	190,317
Port Huron	378	157,105
Toledo	72	21,108
Duluth	.....	164,536
Marquette	.....	40,725
Sandusky	84	34,047
Niagara Falls	21	13,949

The total fleet on the Great Lakes number all told 3,425 vessels whose aggregate registered tonnage is 4,668,350 tons, of which 1,210 are steam vessels, 72 of them in the passenger trade. The remainder are schooners, tow barges and lake tugs. These figures do not include harbor tugs, steam yachts or small excursion boats nor the Canadian vesssls trading on the lakes, which if added would increase the gross tonnage to about 6,000,000 tons. This fleet carries a regular crew of 51,525 men all told, besides giving employment to nearly 150,000 men as coal, ore and grain shovelers, stevedores, dock hands and others. The fleet called the inter-ocean fleet consisting of 1,067 vessels pass through the Straits of Mackinaw and the Detroit river carrying immense cargoes of grain. The following table shows the entrances for the year 1899:

PORT.	Coasting.		Foreign.		No. of British Ships.
	No. Vessels	Tons.	No. Vessels	Tons.	
Chicago	6,706	4,322,206	149	203,347	12
South Chicago	1,141	1,749,416	12	6,366	.....
Michigan City	248	72,360	.....	.....	.....
Port Huron	2,446	769,149	244	.....	294
Cleveland	6,538	8,304,404	666	406,795	208
Detroit	3,905	1,175,221	532	108,221	564
Toledo	2,419	1,422,658	.....	.....	.....
Grand Haven	8,284	.....	.....	.....	.....
Ogdensburg	1,007	111,011	.....	.....	.....
Sandusky	.....	383,754	.....	.....	150

The clearances for 1899 were as follows:

PORT	Coasting.		Foreign.	
	No Vessels.	Tons.	No. Vessels	Tons.
Chicago	6,711	4,296,203	273	286,618
South Chicago	1,082	1,672,726	60	62,337
Michigan City	303	72,376	.....	.....
Port Huron	3,128	893,496	358	.....
Toledo	2,417	1,428,214	.....	.....
Cleveland	6,279	8,240,538	930	652,261
Grand Haven	8,396	.....	.....	.....
Ogdensburg	868	56,457	.....	.....
Sandusky	.....	806,538	.....	.....

On the first day of January, 1900, there was building or in course of construction in the various shipyards of the Great Lakes 32 vessels of 177,900 tons, some of them freighters of from 6,000 to 8,000 tons gross capacity. In addition there was a large number of small vessels building. The foregoing may serve to give the unitiated an idea of the magnitude of the commerce and navigation carried on upon the great inland seas of America.—Coast Seamen's Journal, San Francisco.

MEAN LEVEL OF LAKE SUPERIOR.

AS REPORTED BY J. H. DARLING, U. S. ASST. ENGINEER.

The mean level of Lake Superior in July, by the U. S. gauge at Marquette was 0.83 above low water datum. This is 0.21 higher than for the preceding month, and equals the normal rise, which is 0.21 from June to July.

The stage for last month is 0.63 foot lower than in July, 1899, a year ago, but is still 0.08 higher than the average July stage for the 26 years from 1872 to 1897.

From United States Forecast Officer Richardson's summary for July it appears that the rainfall for the month was 3.94 inches, which is 0.23 in excess of the normal for July. This is the first month for this year that comes up to the normal.

The foregoing figures make a much better showing than a month ago. The long dry period experienced in this region appears to have come to an end, and the outlook is favorable for a good stage on this lake from now on, provided we have only an average rainfall.

NOTES.

CAPT. ROBLEY D. (FIGHTING BOB) EVANS, U. S. NAVY, has returned to Washington, D. C., from the Hot Springs of Arkansas, and says: "This Government may have to stand alone but it must assert itself and show that it is now a Power to be reckoned with in the Far East. If the United States Navy is called into service I hope I shall be where I can hear the screaming of the shells and booming of guns, which is the only means of satisfying one who has passed years on a battleship."

SYLVESTER BAXTER writes an interesting article in the Atlantic Monthly for August on "Submarine Signaling;" a principle of determining the situation of a vessel by means of sound signals transmitted from three different stations located at certain known points. "Acoustic triangulation" is the name appropriately given to the principle that makes this thing a reality, and Arthur J. Mundy, a Boston gentleman, devised and elaborated the system. Mr. Mundy had been studying the problem of submarine signaling in association with the eminent physical scientist, Professor Elisha Gray, and together they had invented a remarkably sucessfull apparatus for the purpose—ringing a bell under water by electrical connections.

NEW LONDON (CONN.) papers report that Wm. A. Fairburn, naval architect and assistant manager of the Eastern Shipbuilding Co., with two other well-known employes of the company, rowed from Norwich to New London, July 4, a distance of 14 miles, in the fast time of 1 hour and 42 minutes, against tide and wind abeam. The previous record of 1 hour and 55 minutes was made in a large ten-oared gig, whereas Mr. Fairburn's boat was only 14 feet long and of his own production. A speed of 8¼ miles an hour in a small b at which contained four persons three of whom were pulling, is a remarkable performance. The boat weighed 120 pounds, and three oarsmen 440 pounds, and each pulling two long oars, and the coxswain 80 pounds, a total of 640 pounds.

WHITE AND HICHBORN.—The relief of Sir Wm. White as head of the construction department of the British navy and the appointment of Mr. Watts to that position, with the salary of $15,000 a year and allowances, calls attention to the compensation which this government gives its corresponding officer. Rear-Admiral Hichborn and Sir William White had a good deal in common. Each started life as a shipwright's apprentice—White in the Devonport dock yards, Hichborn in the Boston Navy Yard. Each worked his way up step by step. They are about the same age, closely resemble each other in personal appearance and manner of speech, both being direct, forceful, plain-spoken men. While the British official received about $20,000, the chief constructor of our navy is paid but $6,000. Rear-Admiral Hichborn has devolving upon him the same responsibilities and tasks which are attached to the work of the British chief constructor. At present he is directly responsible to the government for the design and construction of 70 ships of war, embracing all types, from battleships to torpedo boats. Rear-Admiral Hichborn and Sir William White have maintained a close personal friendship for many years.

FROM July, 1899, to April, 1900, only one suspension among shipbuilders of any importance occurred, while several plants long closed reopened. And during the same ten months there were projected ten shipbuilding corporations proposing to establish plants costing all the way from half a million to six million dollars. The mercantile tonnage in process of construction in American yards now is worth $29,500,000, against $20,000,000 a year ago. But in addition to this there are large naval contracts and it is evident that these will continue for some years. The yard at Newport News represents an investment of twelve millions, the new plant at Camden will have cost six millions when opened for work, the Cramp works and the Union Iron Works of San Francisco represent very large investments, which are remunerative enough to satisfy their owners; the yard at Sparrow's Point, near Baltimore, was built ten years ago, but was little used for some time, it has within two years been equipped with machinery and is doing important work. The steel shipbuilding plant at Bath, Me., is practically new, though ostensibly an addition to a wooden shipyard. There will presently be a yard at New London at work on the largest vessels built in Ameica, and an important yard has been rapidly established in Richmond, Va. All these yards are provided with exceptionally fine machinery; everything is new and of the best, and the American plan of doing everything possible by machinery instead of by hand is carried in these yards quite as far as it is in any manufacturing establishment in the country.

NAUTICAL ASTRONOMY OF THE NINETEENTH CENTURY.

With the development of over sea commerce in the eighteenth century, so keen an interest was felt in the improvement of nautical astronomy, that the English parliament offered 30,000 pounds sterling for the best method of finding the longitude at sea. This sum has not been awarded to any single party, but been divided among chronometer makers and scientists contributing to the improvement of methods, tables, and instruments; so that at the beginning of the nineteenth century nautical astronomical methods were nearly as far advanced as at present, the last century adding little in that line, mainly perfecting instruments.

This contrast in the activity of the last two centuries can only be explained by the fact that the moneyed interest was satisfied nautical astronomy had arrived at perfection and that finding the exact position of a vessel at sea depended solely on the construction of perfect timepieces.

With the cessation of rewards, scientific researches for the improvement of nautical methods ceased or were of an inferior order, because there was no money in it, being left to the sailor on the principle, that he would care as much for the safety of his ship as for his life.

Thus it took more than fifty years before Capt. Sumner presented his new method of finding a ship's position at sea, the only improvement in nautical astronomy during the last century. Although not much was gained by it, because of the exceedingly narrow limits to which the method is confined, in order to obtain satisfactory results, it gave a temporary impulse to research, resulting in the discovery of a crude method of finding the place the ship is in by lines of position.

A characteristic feature of nautical astronomy during the last two centuries is the prevalence of the one object theory with its inherent defects. With single altitudes when time is required, the latitude is generally in error, and when latitude is required the time is in error, rendering results erroneous too. And in the combination of two altitudes of the same object and the elapsed time between observations, course and distance made good in the interval is an element in the necessary reduction of altitudes, an element always liable to error, and consequently also the results derived from such a combination.

The one object theory in nautical astronomy is in many respects like the problem of finding a ship's position by bearings of a single object. One bearing gives only one line of position leaving the exact place the ship is in undefined, and by two bearings with the course and distance run in the interval between bearings, the ship's position is doubtful, because of errors in course and distance on account of bad steering, of compass errors and unknown currents. The same drawbacks are found by observing a single heavenly body, and therefore the one object theory is only a make shift lacking a solid basis.

The impotence of the last century in nautical-astronomical respects, is indicated by the lack of combinations of different objects and the neglect of objects with rapid changes of the declination like the moon. Not improvement of the opportunities for observation, but simplicity of methods and formulæ to the exclusion of exactness being aimed at, observations were mostly confined to sun and pole star. (See my article in the MARINE RECORD of April 19, last).

Conservative and non-productive, officialdom cared little for the advancement of nautical science, being not a promoter, but merely a preserver of inventions and improvements; a soulless body, like a hand organ on which certain tunes have been stitched to be repeated over and over again at will; merely bent upon inflicting punishment on the poor sailor, who by defective, officially approved methods of computation got stranded, the increased speed of vessels upsetting all his calculations. An example of this kind is furnished by the simple and time honored method of finding latitude by the meridian altitude of the sun. The greatest altitude of a heavenly body is always the meridian altitude, if no change of the declination and no change of position during observation takes place; but any such change causes the greatest altitude to be an ex-meridian altitude the hour angle of which has to be taken into account. The official method neglects this hour angle, and an error in latitude is the consequence. For instance, the greatest true altitude of the sun be 25° o′ S., the declination 5° o′ S.; rate of speed 30 miles per hour; course made good true N.; then by the official method in use we have:

Meridian Z. D.	65°	0′	N.
Declination	5	0	S.

Latitude in at apparent noon 60° 0′ N.

The correct method gives the following result:

Hour angle of altitude	−3°	28′	31″	=−13m. 54s.
Reduction to the meridian		3	29	
Meridian altitude	25	3	29	S.
Meridian Z. D.	64	56	31	N.
Declination	5	0	0	S.
Latitude 13m. 54s. before noon	59°	56′	31″	N.
Run up to noon		6	57	N.
True latitude in at apparent noon	60°	3′	28″	N.

Consequently the latitude by the method in use is nearly 3½ minutes in error.

Supposing the object to have been the moon, the declination increasing 17′ per hour, we have by correct method, approximately:

Hour angle of altitude	−5°	26′	41″	=−21m. 47s.
Reduction to the meridian		8	32	
Meridian altitude	25	8	32	S.
Meridian Z. D.	64	51	28	N.
Declination 21m. 47s. previous to meridian passage	4	53	49	S.
Lat. 21m. 47s. before mer. passage	59°	57′	39″	N.
Run in 21m. 47s.		10	54	N.

Latitude in at moon's transit 60° 8′ 33″ N.

Showing the latitude by the official method in use to be over 8½ minutes in error.

Under adverse conditions an error of from 3½ to 8½ and more minutes in latitude is not unfrequently the cause of stranding.

Although defects in officially approved methods are numerous and multiply with the increase of the speed of vessels, the method of finding the longitude by lunar distances beats all precedents, being a fraud and delusion on account of the impossibility of measuring such distances with sufficient accuracy at sea. Having been approved by the sages of the last century, millions of dollars have been spent in course of time for forecasting lunar distances in the nautical almanacs, and no less than forty different formulæ and tables for reducing the observed distance to the true distance have been devised. All to no purpose.

With such results of the labor of a century it is obvious, that nautical astronomy during the last century has not emerged from infancy.

JOHN MAURICE,
Civil Engineer and Nautical Expert.

Chicago, July, 1900.

TRAFFIC THROUGH THE ST. MARY'S FALLS CANAL.

STATISTICAL REPORT OF LAKE COMMERCE THROUGH CANALS AT SAULT STE. MARIE, MICHIGAN AND ONTARIO, FOR THE MONTH OF JULY, 1900.

EAST BOUND.

Articles.	U. S. Canal.	Canadian Canal.	Total.
Copper.....net tons	16,790	680	17,470
Grain.....bushels	591,864	184,600	776,464
Building stone.....net tons	3,708	500	4,208
Flour.....barrels	634,357	70,610	704,967
Iron ore.....net tons	2,645,907	137,648	2,783,555
Iron, pig.....net tons	6,071	.....	6,071
Lumber.....M. ft. B. M.	113,804	3,297	117,101
Silver ore.....net tons	.....	.....	.....
Wheat.....bushels	3,573,500	1,146,173	4,719,673
General mdse.....net tons	6,102	1,562	7,664
Passengers.....number	4,860	1,767	6,627

WEST BOUND.

Coal, hard.....net tons	84,407	3,904	88,311
Coal, soft.....net tons	599,760	88,826	688,586
Flour.....barrels	52	.....	52
Grain.....bushels	2,584	3,000	5,584
Manufactured iron...net tons	15,617	2,415	18,032
Salt.....barrels	6,978	.....	6,978
General mdse.....net tons	53,985	7,349	61,334
Passengers.....number	5,423	1,753	7,176
Freight—			
East bound.....net tons	3,049 375	194,983	3,244,358
West bound.....net tons	754,862	102 545	857,407
Total freight.....net tons	3,804,237	297,528	4,101,765
Vessel passages—			
Number.....	2,601	497	3,098
Reg'd tonnage.....net tons	3,206,749	306,638	3,513,387

Compiled at St. Mary's Falls canal, Michigan, under direction of Lieut.-Col. G. J. Lydecker, Corps of Engineers, U. S. A. Joseph Ripley, Asst. Engr. and Genl. Supt.

SHIPPING AND MARINE JUDICIAL DECISIONS.

(COLLABORATED SPECIALLY FOR THE MARINE RECORD).

Notice of Defects.—A statement made to an employer that an eyebolt, through which led a guy rope, was so loose that it would turn around, and failed to lead right, and should be changed, is not notice of a latent defect in the bolt, which had no connection with its looseness. Killman vs. Robert Parmer & Son Shipbuilding & Marine Ry. Co., 102 Fed. Rep. (U. S.) 224.

Collision—Steam and Sail Vesssel.—A steamer has no right to call upon a sail vessel to change her course, where she can, by herself taking the proper course, avoid collision, and the failure of the sail vessel to obey such signal cannot be imputed to her as a fault, especially where it does not appear that it would have lessened the danger of collision.—Squires vs. Parker, 101 Fed. Rep. 843.

Collision—Moving and Moored Vessel.—A moving vessel must be held liable for damages caused by collision with one moored, unless she overcomes the presumption of fault arising from the fact of such collision; and she cannot be exonerated, although it appears that the negligence on her part was slight, and the collision was more the result of accident than such fault.—The Wm. M. Hoag, 101 Fed. Rep., 846.

Damage to Cargo—Condition of Bill of Lading Requiring Notice of Claim.—A provision of a bill of lading that "the shipowner is not to be liable * * * for any claim, notice of which is not given before the removal of the goods," even if conceded to be unreasonable and void as to the time within which it requires the notice to be given, is valid, and will be enforced to the extent of requiring notice to be given, and it must be given within a reasonable time, or the right to recover on a claim for damage to the goods will be barred. Killman vs. Robert Parmer & Son Shipbuilding & Marine Ry. Co., 102 Fed. Rep. (U. S.) 362.

Shipping—Damage to Cargo—Condition of Bill of Lading Requiring Notice of Claim.—A provision of a bill of lading that "neither the steamship owners nor their agents, nor any of their servants, are to be liable * * * for any claim notice of which is not given before the removal of the goods," imposes a reasonable and valid condition precedent to the right to maintain a suit for damage to the goods in shipment, either against the owners personally or in rem, at least to the extent of requiring notice to be given within a reasonable time; and a failure to comply with such condition is not excused by the fact that the ship had knowledge of the damage, the chief purpose of the requirement being to advise the owners that they are charged with liability therefor. Killman vs. Robert Parmer & Son Shipbuilding & Marine Ry. Co., 102 Fed. Rep. (U. S) 366.

Master and Servant—Defective Appliances—Injury to Employe.—Plaintiff, who was employed as guy tender aboard a scow, was injured by the breaking of an eyebolt through which led a guy rope used for the purpose of swinging aboard a boom hung from the mast of the scow. The bolt was originally suitable, and, while it had been used about a year or a year and a half, plaintiff had not discovered anything about it, though he had observed it in his work every day for six months. After the break, however, an old crack was discovered in the bolt, which was not discoverable without removal from its position. Held, that defendent was not negligent in failing to remove the bolt, after so brief a use, for the purpose of inspecting its condition for latent defects, unless its attention was directed to the propriety of doing so. Killman vs. Robert Parmer & Son Shipbuilding & Marine Ry. Co., 102 Fed. Rep. (U. S.) 224.

Shipping—Authority of Shipper's Agent to make Contract.—The foreign agents of an owner of merchandise, authorized to ship the goods, also have implied authority, generally speaking, to agree upon the terms for the contract for carriage; and where they know that trans-shipment in necessary they may lawfully empower the first carrier to deliver the goods to a connecting carrier upon terms that are not the same as those of the first bill of lading. Where, in such case, the goods are shipped on through bills of lading which authorize the initial carrier to trans-ship and forward by steamer, "subject to the terms and conditions of local bills of lading issued by the agents of such steamer," or contain other equivalent provisions, the owners of the goods are bound by the provisions of bills of lading issued by the connecting carrier to the first carrier therefor on their transshipment, so far as such provisions are lawful and enforceable. Killman vs. Robert Parmer & Son Shipbuilding & Marine Ry. Co., 102 Fed. Rep. (U. S.) 362.

WIRELESS telegraphy seems to have passed through its period as a nine days' wonder and to be taking a less prominent position than it once occupied in the electric field. It is greatly to be hoped that the ingenuity of inventors will devise means to overcome the several difficulties which surround its reduction to practice as one of the working means as communication. Foremost among these is the apparent practical impossibility of preventing the interference of simultaneous signals in the same region of influence, or, what amounts to the same thing, the production of a selective system for several stations whereby any two can communicate without interfering with the others. Until this is done the utility of the system, beautifully ingenious as it is, seems to be confined within extremely narrow limits.—Electrical Review.

MARINE RECORD

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CLEVELAND, O., AUGUST 9, 1900.

ALL lake ports are bent on honoring the Congressional committee now touring the lakes. To mention the particular circumstances occuring at each port would be to consume the entire issue of the RECORD, we must therefore content ourselves and readers by stating as above.

COMMERCIAL Agent Johnson, of Stanbridge, under date of June 9, 1900, reports that the Canadian government has adopted similar regulations to those of the United States, requiring triplicate invoices, one to be filed at the port of entry, one with the shipper, and the remaining one to be forwarded to the department of customs at Ottawa.

FOURTEEN out of the seventeen members of the House Committee on Rivers and Harbors and one member of the Senate Committee on Commerce represent the Congress of the United States on the tour of inspections of the harbors on the Great Lakes. On no previous trip has there been such a large representation of the House committee.

The standing of Milwaukee in the United States marine hospital service has been changed from third to second class. Dr. J. M. Allen, who has been the contract surgeon at that port for the past thirty-one years, has been relieved by Dr. Herbert Blue, a past assistant surgeon of the navy. Dr. Blue took charge of his work this week, having been detailed from Genoa, Italy. While hitherto sailors have been sent from Mil waukee to Chicago whenever possible, it is now expected that the cases will be treated at Milwaukee without a transfer being made.

AT a recent gathering in Boston one of the speakers made the following impressive statement: "The country received from its predecessors the horse; we bequeath the bicycle, the locomotive and the automobile. We received the goose quill, and bequeathed the typewriter; we received the scythe, we bequeath the mowing machine, we received the sickle, we bequeath the harvester; we received the hand-printing press, we bequeath the Hoe chlinder press; we received Johnson's Dictionary, we bequeath the Century Dictionary; we received gunpowder, we bequeath nitroglyerine; we received the tallow dip, we bequeath the arc light; we received the galvanic battery, we bequeath the dynamo we received the flint lock, we bequeath automatic firing Maxim guns; we received the sailing ship, we bequeath the steamship, the greyhound of the sea; we received the frigate Constitution, we bequeath the battleship Oregon, we received the beacon signal fire, we bequeath the telephone and wireless telegraphy; we received wood and stone for structures, we bequeath twenty-storied sky-scrapers of steel. Such are a few of the bequests of the nineteenth century to the twentieth."

POLICING THE CANADIAN CANALS.

So much alarm has been created in Canada by the several attempts to wreck a part of the Welland Canal that it is understood the Ottawa authorities have retained the services of detectives in several parts of the United States to keep them thoroughly informed as to the movements of suspected conspirators. Though a few men of the Dominion police have been keeping a quiet watch on all the canals ever since the Welland canal outrage, the force of the Cornwall canal was suddenly increased the early part of the week, and a night and day watch was maintained. Report has it that this action is due to information received from the United States to the effect that an attempt will be made to blow up the Cornwall canal in revenge for the punishment of the men who tried to wreck the Welland canal.

The Cornwall canal is eleven miles long, and any serious damage to it would be a great loss to the country, interrupting navigation from the lake to the sea board. Cornwall is situated very near the American frontier, and it will be remembered that it was threatened with invasion at the time of the Fenian raid. The Dominion authorities deny that there is any Fenian scare in connection with the present policing of the canal, but they are very reticent about the precautions taken and the movements of the police, who are under the direction of Col. Sherwood, chief of the Dominion police force. They simply assert that it would be unwise to take the public into their confidence in the matter.

THE ST. CLAIR CANAL.

"Congress having, in the act of June 6 last, called for plans and estimates for doubling the commercial capacity of the St. Clair flats ship canal, a full special report in the matter will be prepared and submitted as soon as praticable," says Col. G. J. Lydecker, Corps of Engineers, U. S. A., in his annual report to the Secretary of War, submitted through the Chief of Enginers. "The last appropriation for the improvement of the canal was made in 1890, and a balance of $3,059 is still available and will be used for repairing and extending the protecting pile work at the ends of canal dikes."

Col. Lydecker says that operations were under the ship channel appropriation in the summer and fall of 1899, and it was not deemed judicious to place an additional plant in that locality until these operations were completed, as it would tend to obstruct and endanger the large commerce passing through the narrow and crooked channels. For that reason action in relation to the commencing of work under the continuing contract system, as provided in the river and harbor act of 1899, was postponed until last spring. The bids were opened for construction of a 21 foot channel, and contracts have been awarded for work on the Lime Kiln Crossing section. Ballard's Reef channel section and for time work by dredges at other parts of the river channel, where excavation is needed to obtain the same low water depth.

Work on the ship channel from Duluth to Buffalo was confined principally to the completing of channels through Round Island shoals in the upper St. Mary's, and a channel in lower Detroit river along the Grosse Isle lower range. The depth now available over the shoalest part of the ship channel is 18½ feet, confined to that section of the Detroit river between the Lime Kiln Crossing and the south end of Bois Blanc Island.

The principal work in St. Mary's river was the construction of an extension of the crib pier in the northeast approach to Poe's lock and intended to provide a much-needed berthing place for vessels approaching the lock. In Hay Lake channel the work included a completion of the deepening of the Middle Neebish section, and of reinforcing the dyke adjoining that channel. This has given a 21 foot channel from the angle at the foot of Hay Lake to Lake Huron.

Dredging in the Cheboygan harbor has resulted in an 18 foot channel 200 feet wide in the Straits of Mackinac, which enables vessels to load three feet deeper than a year ago. Dredging at Alpena harbor resulted in obtaining a 16 foot channel, an increase of three feet.

Saginaw river now has a 16 foot channel through the bar at its mouth for about two-thirds of distance between curves of like depth in the bay and river.

SAMPLES of Japanese coal have been tested by the War Department at Washington, and it is announced that the tests have demonstrated that this coal compares favorably with the product of American mines. Japan being so near Manila, it is probable that the quartermaster's department in China and the Philippines will find it cheaper to use Japanese coal, than to import American so many thousand miles across the Pacific ocean.—The Black Diamond.

CHICAGO RIVER.

Colonel Robert Rae, admiralty lawyer and noted authority on marine matters says:

"The increased purity of Chicago river water since the drainage board accomplished its great work makes dock property more desirable than ever for manufacturing sites.

"Moreover, if the river should be widened to 200 feet and deepened to modern harbor requirements it would still be inadequate to the harbor needs of Chicago. Imagine for instance that the utmost improvement contemplated has been accomplished, at whatever stupendous cost it may come to, and the river was 200 feet wide, cleared of every possible obstruction and deepened to modern requirements.

"Now suppose this resulted in the prosperity to it necessary to make such an immense expenditure profitable and we have it crowded with shipping, it would still be too narrow and cramped for room.

"The modern ship must be 500 feet and more in length, coal and grain boats, for instance, must have room for five hatches in order to load and unload expeditiously. Otherwise they cannot compete with railroads in the cost of cargo handling.

"A modern harbor should accommodate four such boats abreast so that one may be moored at each side of the river and have room between them for the others to pass.

"The smaller boat trade will last no longer than until the existent small boats give out. No more of them will be built.

"All this is so apparent that we no longer make any pretense of ability to hold our lumber trade, and our coal trade is fast drifting away from Chicago's narrow and too shallow river harbor."

Another authority on the subject says that in this day of condensing engines the great value of a location near water, makes Chicago dock property especially valuable for electrical plants, power houses, etc., for whether the water be clean or foul they need it and can use it for condensing.

The Metropolitan Elevated Railway Co. located their power plant about a mile from the river and then spent a million of dollars running a tunnel to it under their right of way. The Union Loop Co., and the Edison Electric Co., made a great saving by locating their power plant directly on the bank of the river. While its increased cleanliness has made the vicinity of the Chicago river more healthful, more attractive and more desirable in every way to large users of steam, and to manufacturing plants requiring larger area that can now be had in the subdivided sections of the city, it seems that the property along the river, now used mostly for docks, is ultimately destined to be used principally, if not entirely, for manufacturing purposes. This seems apparent whether the river be kept clean or not; whether it be widened, cleared and deepened for harbor purposes; or whether harbor dilemma be taken at once by the horns, as it should be, and as eventually it will be if ever a satisfactory result is attained. That can only be with fixed bridges, the river closed to all transportation, except by lighters, and all loading and unloading relegated to Chicago's outer harbor.

"It seems to me that this is not only, by long odds, vastly the best settlement of the vexed question for the convenience of the resident public of Chicago, but, also, radical as it may seem, it is the very best arrangement, in the immediate present and in the future, for Chicago's great lake marine interests."

THE question of the coal supply is still much discussed in England. In an address before the Victoria Institute, Prof. Edward Hill considered it in a new and important way. He said that the real question of the duration of the supply does not refer to the exhaustion of the coal fields, as there may be inexhaustible veins at a great depth. But the pratical exhaustion may be reahed when, owing to increased depth and expense of mining, to actual diminution of supply and other causes, the cost of coal will tend to become prohibitive, and English manufacturing industries will be heavily weighted as compared with other countries, such as America, where coal is more abundant and of easy access. Since the last inquiry made by a royal commission thirty years ago, the output of British coal has doubled. Professor Hill favors an export duty, pointing out that last year about 40,000,000 tons, or one fifth of the British coal production, was exported, and he advocates a duty of five shilllngs, $1.20 a ton. English statesmen and economists realize that it is only the question of a few generations when the matter of the coal supply will be vital. It is stated another royal commission is to be appointed.

MOST EFFICIENT MACHINE TOOLS.

We have received the following account of experiments and tests made at the works of the Bethlehem Steel Co., South Bethlehem, Pa.:

Mr. F. W. Taylor in the reorganization of our shop methods found several changes necessary, the most important of which was the discontinuance of the miscellaneous assortment of tool steels used by the different men in the shop and the establishment of a standard and uniform grade of tool steel, the use of which would be enforced upon all of the men regardless of their preferences.

A special lathe was set aside for the purpose of experimenting with tool steels of different makes with a view to the selection of a standard for use, and several picked men were set to work testing the relative merits not only of the different tool steels then in the shop, but all brands of established reputation. In the elaboration of these tests the services of our engineer of tests, Mr. Maunsel White, were enlisted.

This full and exhaustive investigation led up to the discovery which afterwards carefully studied and persistently followed up step by step has resulted in the remarkable development which can be seen in our machine shop at the present time.

In the tests of these various makes of tool steels over 200 tons of steel forgings have been cut up into turnings on the experimental lathe, and it is estimated that over $100,000 have been expended in labor and material alone in developing the process called by the names of the discoverers the "Taylor-White" process. A still further large sum has been invested in the patents covering the process which have been purchased by the Bethlehem Steel Co. from the inventors.

This large investment, however, has more than been repaid in the last year by the saving in labor cost and larger output. The increase in cutting speed of the various machine tools throughout the machine shop has entirely reversed the inequality of balance existing two years ago, so that the capacity of the forge has had to be largely increased to keep pace with the rapidly growing efficiency of the machine shop.

The introduction of this process for the treatment of our tools has enabled us to speed up our main lines of shaft from 90 to 250 revolutions, and further changes in countershafts have been made to speed up individual machines, which has brought about the largely increased efficiency in our machine shop.

In order that the rate of progress might be observed, records from time to time were made of the average amount of metal cut per hour per tool throughout the shop. The table shows the increase in efficiency made up to January of this year.

Average	Oct. 25 1898	May 11 1899	Jan. 15 1900	Gain in per cent. cut of 3d over 2d	Gain in per cent. cut of 3d over 1st
Cutting Speed.....	8′ 11″	21′ 9″	25′ 3″	16%	183%
Depth of Cut.....	.23	.278	.30	8	30
Feed.....	.07	.0657	.087	32	24
Pounds of Metal removed per hour	31.18	81.52	137.3	68	340

This gain has since been increased by the further speeding up of other machines and the more general interest taken by the men with a fuller understanding of the changed conditions of higher speeds.

The virtue of the "Taylor-White" process, which we are using for the treatment of our tools, is that it gives to the steel the very valuable and exceptional property of retaining a high degree of hardness when heated to a visible red heat. It is possible with one of these tools to cut steel with a speed so great as to heat up the point of the tool to redness and have it continue to cut for several minutes at this speed, leaving an unusually smooth finish on the work, as well as cutting accurately to size. The advantage in leaving a smooth roughing cut and of having the work accurately to size will be readily appreciated as it materially lessens the work of finishing.

The practical speeds at which these tools will run has been found to be from two to four times that of any steels which we have experimented with, and we have endeavored to obtain the best in the market.

The effect of the "Taylor-White" process, which is applied after the tool has been dressed or machined to shape, penetrates to the center of the steel, even in the largest tools we have ever treated, i. e. 4 inches square.

All of the standard brands of self hardening steel which have been experimented with are improved to a more or less extent by the treatment, it is preferred, however, to use a steel of special composition in order to get the greatest uniformity and maximum results.

This special steel forges so much more readily than the general run of self hardening steels that tools of difficult shapes may be easily made up.

We have also discovered a simple and comparatively rapid method of annealing our special steel by which tools may be easily machined to shape, making it applicable to twist drills, chasers, inserted cutters, etc., which have heretofore not been made from self-hardening steel.

A very important feature resulting from the use of this process is that the tools are extremely uniform in quality, so that work on which they are used can be regularly performed at the maximum rate of speed. The variation in the quality of these tools does not run over 5 per cent., which insures a much greater degree of uniformity than is attained in any other tools that we know of, whether made either of tempered or any air-hardening steel. With uniform tools the piece work system can be most efficiently used, as the piece rate must always be based not on the average cutting speed of the tools, but on the speed of the worst tool in use.

A great advantage in the use of these tools is that when cutting dry at the rate of maximum efficiency the chips should come off blue, these blue chips enable a foreman at a glance to tell whether the work is being done at the proper speed. When running under water at the proper cutting speed the chips should show blue immediately upon shutting off the water and allowing the tool to cut dry for a few moments.

The apparatus used in the "Taylor-White" process offers also a simple and effective means of heating any other tools at uniform temperatures which can be easily controlled, so that ordinary carbon steels can be hardened through the use of the same apparatus at temperatures which will insure greater uniformity and higher qualities in this class of steel, as well as in self-hardening steels.

As is well known, tempering steels of different makes and different qualities require different temperatures for hardening to obtain the best results, therefore by means of our apparatus, which is capable of closely controlling temperature, these points may be accurately determined for each class of steel, and made use of in daily practice.

The operation of the process is extremely simple, as it is controlled by apparatus which regulates the different steps and does not require skilled or expert labor.

We have been glad to undertake in our shop any experiment desired, in order to satisfy interested parties of the value of our treated tools. We have an experimental lathe, before mentioned, fitted up especially for making tests, which can be run at speeds from 2 to 300 revolutions per minute, and will take work up to 60 inches in diameter. It is driven by an independent motor of 40 horse-power, which gives us ample power for any desired test. We have on hand forgings of steel of different hardness, running from the hardest tool steel to soft merchant steel, and of wrought iron, also castings of steel and cast iron, with which we can carry out any test necessary to compare our treated tools with any others.

We have in our shop a great many interesting problems connected with the speeding up of machine tools, which have been more or less solved.

There is a very general interest taken in the question of speeding up machine tools, especially by those whose business is competitive, since the gain made by this simple means is immediate, and so great in proportion to its cost, that it appeals at once to the engineering fraternity as an improvement not safely to be overlooked or postponed.

Already more than 100 machine shops in this country have sent their representatives to our shop, to study the use of this steel, and in many cases to make a competitive test with their tools against ours.

The price of a shop-right to use the "Taylor-White," process, is based upon the number of machines as well as their size and character on which the treated tools may be used to advantage.

A most important result, which must follow the more or less universal introduction of the "Taylor-White" process, will be the practical exclusion of the foreign brands of self-hardening steel, which are now supplying over one half of the demand, and will place the market entirely in the hands of the American steel maker.

NOTICE TO MARINERS.

LIGHT-HOUSE ESTABLISHMENT,
OFFICE OF THE LIGHT-HOUSE INSPECTOR, 11TH DISTRICT,
DETROIT, MICH., August 4, 1900.

Information has been received that Hay Lake Channel entrance gas buoy No. 35, St. Mary's river, Michigan, has been displaced and is now about 150 feet to the southward and eastward of its proper position.

It will be placed in position as soon as possible.

Notice is hereby given that Hay Lake Channel Entrance gas buoy No. 35, St. Marys river, Mich., which was reported as cut of position in Notice to Mariners of Aug. 4, 1900, has been replaced in its proper position.

On or about Aug. 8, 1900, the remains of the four cribs in the 20 ft. dredged channel, Lake St. Clair, which are now marked by gas buoys No. 1, 8, 13 and 19 will be marked by placing over each crib as near as possible a barrel buoy painted half red and half white and marked with the name and number of the crib.

A similar barrel buoy will be placed near as possible over the remains of the crib at the head of Russell Island, St. Clair river.

By order of the Light-House Board:

J. C. WILSON,
Commander, U. S. Navy, Inspector 11th Light-House Dist.

PROF. MOORE, Chief of the U. S. Weather Bureau acting under the special direction of Secretary of Agriculture Wilson, will effect several improvements in the storm-warning service of the Weather Bureau as applied to lake commerce, the most notable of which will be the locating of many of the new 100 foot iron towers for the display of warning flags and the more powerful lights. The question must occur to a great many people, what has agriculture to do with marine? The canal boatman once solved the problem when he hailed a plowman near the bank of the canal and stated to him that their occupations were both alike, for, said he, you plow the land and I plow the ocean?

FLOTSAM, JETSAM AND LAGAN.

Milwaukee has invited the Congressional Rivers and Harbors Committee to visit that city.

Capt. M. A. Healy, of the revenue cutter service, is recovering rapidly, and may soon be able to report for duty.

Gasoline and compressed air will operate the fog whistle at Racine. The machinery is the first of its kind to be used on Lake Michigan.

Capt. J. P. Nagel, at Toledo last Thursday, refused 25,000 tons of coal to Portage at 40 cents. A month ago he received 50 cents to the point named.

The tug J. W. Westcott, recently purchased by Davidson & Son, of Grand Marais, has gone into service at Grand Marais, and not at Black river, as was stated.

The last cargo of square timber of a contract of 6,800,000 feet was shipped from Grand Marais to Buffalo, Tuesday. It consisted of 636,000 feet. The steamer Sachem and barges carried the most of it.

An anchor and several fathoms of chain were found Saturday by Smith brothers, fishermen, near port Washington, and brought ashore. It is supposed the anchor belonged to the passenger steamer Toledo, which was lost in that vicinity in 1857. There was but one survivor out of a large number of passengers.

The owners of the sunken schooner Fontana are taking all precautions to avoid another accident. Lights are placed on both her spars at night and men with torches and a megaphone are stationed on the wreck. It is not yet definitely decided what disposition will be made of her. She may be destroyed with dynamite.

At Ashland, Wis., on Saturday, about 50,000,000 feet of lumber, valued at $1,000,000, was destroyed by fire. The lumber was in the yards of Barker & Stewart and the Keystone Lumber Co. The 40,000,000 feet of lumber destroyed belonged to the Hines Lumber Co., of Chicago, whose loss was $800,000, covered by insurance.

Three collisions occurred this week in the rivers between Lakes Erie and Huron. The schooner Santiago in tow sunk the Fontana near Fort Gratiot. The schooner H. W. Sage was sunk in the St. Clair river, by the Western Transit Co. steamer Chicago, and the schooner J. S. Richards by the steamer John W. Moore, opposite Walkerville.

The entrance of the steamer James B. Eads into Portage Lake last Friday with a cargo of 5,000 tons of coal was rather a surprise. The Amazonas recently entered Dollar Bay with a cargo of 3,440 tons on a draft of 17 feet 6 inches, which was considered a big draft. When the Eads entered the lake on a draft 17 feet 9 inches, Capt. Byrnes made continual soundings and between the Portage entry and the docks at Lake Linden found a depth of 22 feet. The Eads is a Bessemer boat and the coal was consigned to the Calumet & Hecla mines.

LETTERS AT DETROIT MARINE POST OFFICE.

August 7, 1900.

To get any of these letters, addressees or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of this list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

Alcombrack, Williard, bge. 131
Andreas, Rose, Mott
Bardin, Harris W.
Burdue, William
Blauvelt, Geo. E.
Blauvelt, C. J., Grecian
Bidwell, Chas. C.
Below, Geo. W., Yukon City
Baughman, Robt., Australia
Bushman, Gus., Presque Isle
Bidgood, A. M., Queen City
Bowman, Wilfred, Sheldon
Bush, George, India
Butz, Jacob, Merida
Cook, Geo. W.
Clapp, Stan
Conklin, William, Maryland
Cudney, Norris, Roby
Dowdell, George
Doyle, Frank P.
Duchane, Henry
Doak, Capt., Adelia Shores
Ellis, Chas. S.
Eisenack, Charley, F. & P. M. No. 5.
Fox, Arthur, W. P. Palmer
Foster, Geo. H., Iron Age
Fish, F. A., Waverly
Graham, Alex., Majestic
Graham, Alex., sch. Yukon
Hyslop, David
Hinman, Mrs. Ellia
Humble, Fred., India
Hargrove, Wm. E., Lewiston
Kinsey, John
Kelley, Jas. A., Fay
Leroy, Albert
Lawler, Willie, Black
Lecuyer, Albert
Lang, J. F.
Marsden, Fred, Neshoto
Manning, Ed. A., Maryland
Marion, H. N. Yukon
Mercier, Geo. W., Moonlight
Murray, John, 2, Swallow
McDougall, J. F., W. P. Palmer
McDougall, Frank, W. P. Palmer
McLeod, Duncan, Sachem
McPherson, Mrs. Jno.
Pardrup, Edward, Iron Chief
Parkhurst, Albert, Huron City
Palmer, Harold
Plant, Wm., H. L. Holden
Rattery, Chas., T. W. Palmer
Rousseau, George
Rhall, Chas.
Read, Capt. Thos.
Rice, Mrs. H. R.
Ryan, Joseph E.
Rock, Wilson
Ramsey, Robert, Sachem
Smiley, E. D., Geo. Stone
Swan, W. J.
Sturdevant, Ed.
Shorland, Cy. W.
Stevison, Joe
Strong, Thomas, Wilhelm
Sharron, John
Thibodeau, Alex. J., 2, M. M. Drake
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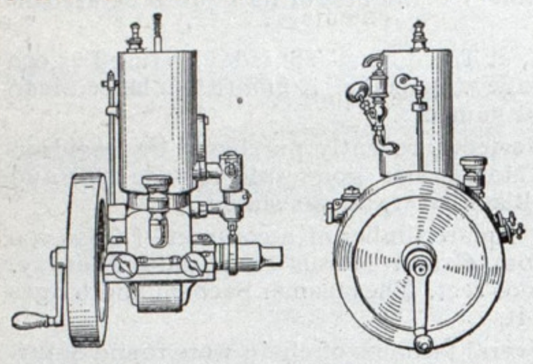

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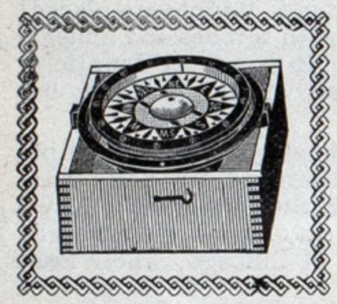

THE Bliss LIQUID (Spirit) COMPASS

Made in seven sizes by JOHN BLISS & CO., 128 Front Street, New York, is finely finished sensitive, accurate and durable. Moves quickly and is extremely steady. Is the best Liquid Compass ever made in this or any country. For sale by ship chandlers generally.

A COMPETENT ENGINEER.

An "engineer" of a stationary engine may get along if he can keep up steam, attend to the feed water, oil the engine and manipulate the throttle. A locomotive or a marine, however, cannot be too skillful and resourceful. It has been within the power of a marine engineer many times to be the savior of his ship and of the lives of those aboard. We do not know that engineer A. B. Geerie, of the Border Knight, which arrived in New York July 17 from Port Natal actually saved the ship, but he certainly accomplished a difficult feat in emergency engineering. The tail shaft broke on July 2, the propeller being lost with the end of the shaft. First, the cargo was shifted and the fore hold flooded, so that the stern bearing was raised above the water line. Then the thrust shaft, or middle portion of the line, was uncoupled and lifted out of the way, and the broken shaft drawn in, a temporary plug closing the hole. It happened that there was a spare piece of shaft and a propeller aboard, and these were successfully placed in position, the propeller securely keyed and the heavy nut behind it screwed up by an improvised wrench. This is all simple and easy enough as it is told, but it is to be remembered that this was not all done on a lake or river, but on the never resting Atlantic. The vessel never ceased its pitching, and he who worked outside to put in the plug as the shaft was drawn inboard was sometimes under water as well as sometimes above it; and then all the subsequent operations in detail in getting on the wheel and properly securing it, done under the conditions that must have prevailed, involved not only skill and judgment of the highest order, but also personal bravery and determination in no lesser degree. The entire job took a little over four days, and the steamer completed her voyage and came into port as though nothing had happened. If this repair had not been made, the steamer might have been towed in, and then there would have been an enormous bill for salvage. It is to be hoped that the services of the brave engineer were recognized and that he was paid, not given "an adequate compensation."—American Machinist.

EASTERN FREIGHTS.

Messrs. Funch, Edye & Co., New York, report the weekly situation on freights as follows:

Since our last report this freight market has pursued a generally advancing tendency, although the enquiry for room in some branches, notably grain, is far from active, and whilst 4s. 3d. to Cork f. o. has been secured by prompt steamer, shippers profess indifference to such further tonnage at over 4 s. a figure, which owners at the moment will not accept. Whilst prompt boats continue scarce, the list of steamers available for Fall business broadens; at the moment the views of owners of the latter tonnage and of charterers at the Southern ports are not quite in line however, and cotton fixtures from the Atlantic have not been very numerous.

The scarcity of sail tonnage in our market is almost unprecedented and the prospects of a speedy change in this condition is not very bright. Under these circumstances we have but little to say beyond stating that rates remain very firm with an upward tendency.

SHIPBUILDING RETURNS.

The Bureau of Navigation reports 105 vessels of 35,944 gross tons built in the United States and officially numbered during the month of July, 1900, as follows:

	WOOD.				STEEL.				TOTAL.	
	SAIL.		STEAM.		SAIL.		STEAM.			
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf	41	3,030	26	3 093	.....	.....	1	6,004	68	12,127
Pacific	3	1,997	5	198	.....	.....	1	277	9	2,472
Great Lakes	3	68	9	265	1	2,790	4	17,350	17	20,473
Western Rivers	1	6	10	866	.....	.....	.....	.....	11	872
Total	48	5,101	50	4,422	1	2,790	6	23,631	105	35,944

The largest steel steam vessels included in these figures are:

Morro Castle, 6,004 gross tons, built at Philadelphia, Pa., for the N. Y. & Cuba Mail S. S. Co.

Lafayette, 5,113 gross tons, built at Lorain, O., American Ship Building Co-, owners.

Simon J. Murphy, 4,869 gross tons, built at Wyandotte, Mich , Eddy Transit Co., owners.

Cornell, 5,082 gross tons, built at South Chicago, Ill., L. W. Powell, V. Pres., owner.

The foregoing figures do not include craft without motive power of their own. From other sources than construction two vessels of 4,443 gross tons were added to the merchant fleet, the principal ones being:

Steamship Californian, 4,436 gross tons, foreign wreck.

Sloop Grit, 7 gross tons, foreign wreck.

NO TRUST IN THE SHIPPING BILL.

In an address before the Trans-Mississippi Commercial Congress, Hon. John R. G. Pitkin, of New Orleans, uttered some incisive truths on the Shipping Bill, in which he exploded a good many fallacies in regard to the operations of the measure. Among other things he showed very plainly that the bill could not foster any trust, as some of its enemies have charged that it would. Mr. Pitkin said in part:

"It is not proposed, while increasing the earning power of our labor by reaching to more markets, to diminish that power in building and sailing the ship which is the reach. It is proposed to do for the shipbuilding industry by subsidy what we do for other industries by tariff; to credit to ourselves the difference in the cost of labor here and abroad, and protect the hold as we protect the counter. The average difference in cost of operation is met in the provision of one cent per gross ton per 100 nautical miles sailed for the first 1,500, etc. Neither can the term of compensation for any vessel extend beyond twenty years, nor its annual entries for compensation exceed sixteen in number. The contract entered into with the government must be enforced by a secured penal bond, equal to ten dollars per gross ton of the vessel, for its construction in one of our yards, its registry and readiness within five years; but no contract can be made after the lapse of ten years from the passage of the act, and no compensation can be applied save as the vessel responds to the terms of the bond, and after its tenth year of service the bounty annually shrinks 5 per cent. If shipowners combine to control freight rates, they forfeit all compensation under the bill; and if shipbuilders combine to control yard rates, foreign-built tonnage, under the terms already stated, replace the new products of such yards. In other words, no trust can ambush itself behind the measure to dictate a tax on either construction or carriage."

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Buffalo	2,075,000	432,000	654,000	.....	83,000
Chicago	10,884,000	2,697,000	1,457,000	325,000	.....
Detroit	156,000	177,000	3,000	11,000	.....
Duluth	8,458,000	393,000	73,000	33,000	46,000
Fort William, Ont.	1,213,000	.....	.....	.....	.....
Milwaukee	930,000	122,000	175,000	2,000	11,000
Port Arthur, Ont.	67,000	.....	.....	.....	.....
Toledo	755,000	534,000	40,000	13,000	.....
Toronto	20,000	.....	6,000	.....	.....
On Canals	25,000	886,000	28,000	.....	.....
On Lakes	909,000	2,664,000	378,000	17,000	1,000
On Miss. River	.....	.....	.....	.....	.....
Grand Total	47,594,000	12,320,000	5,585,000	620,000	392,000
Corresponding Date, 1899	37,166,000	10,461,000	4,511,000	593,000	416,000
Increase	1,240,000	628,000	.....	63,000	.....
Decrease	.....	.....	108,000	.....	126,000

While the stock of grain at lake ports only is here given. the total shows the figures for the entire country except the Pacific Slope.

TREASURY DECISIONS.

ORDERS FOR TRAVELING AND ALLOWANCE FOR TRAVELING EXPENSES.

Inspectors of the Steamboat-Inspection Service, so far as their respective districts are concerned, exempted from the provisions of Department Circular No. 114, that orders for traveling and allowance for expenses be signed by the Secretary or an Assistant Secretary, except in emergency cases.

TREASURY DEPARTMENT, July 26, 1900.

Sir: It is hereby ordered that inspectors in the Steamboat-Inspection Service be, and they are hereby, exempted from the provisions of Department Circular No. 114, so far as their respective districts are concerned, which requires that all orders for traveling allowance for traveling expenses be signed by the Secretary or an Assistant Secretary, except in emergency cases.

Respectfully,
L. J. GAGE, Secretary.

Hon. JAMES A. DUMONT,
Supervising Inspector-Gen. Steamboat-Inspection Service.

OBSTRUCTION TO NAVIGATION.

TREASURY DEPARTMENT, July 28, 1900.

Collectors of customs and others:

This Department is advised that on receipt of a report that part of a wreck was seen near New York Harbor, search was made by a United States vessel, which found that a timber or spar had been attached by a wire rope to rocks on the bottom, probably as a guide to fishermen, a few miles from Sandy Hook light-ship, in such a position as to endanger navigation.

Severe penalties are provided by Congress for the creation of any obstruction not affirmatively authorized by law to the navigable capacity of any of the waters of the United States; and it is made unlawful to "float loose timber and logs * * * in streams or channels actually navigated by steam vessels, in such manner as to obstruct, impede or endanger navigation," etc.

You will please take measures for the enforcement of any penalty or penalties incurred in any case brought to your attention in which obstructions may have been unlawfully placed in the path of vessels entering or leaving your district.

H. A. TAYLOR, Assistant Secretary.

Rules and regulations fixing salaries of inspectors of steam vessels under act of Congress approved March 1, 1895, concerning the regulation of steam vessels.

TREASURY DEPARTMENT, July 24, 1900.

To supervising and local inspectors of steam vessels:

Under the provisions of section 4414 of the Revised Statutes of the United States as amended by the act of Congress approved March 1, 1895, it is provided that the salaries of the local inspectors of steam vessels shall be regulated in proportion to the number of steamers inspected in each of the various districts as follows:

In districts inspecting 100 steamers and less, to a salary of $1,200 per year each.

In districts inspecting over 100 and less than 150 steamers, to a salary of $1,500 per year each.

In districts inspecting 150 and less than 200 steamers, to a salary of $1,800 per year each.

In districts inspecting 200 and less than 300 steamers, to a salary of $2,000 per year each.

In districts inspecting 300 and less than 500 steamers, to a salary of $2,250 per year each.

In districts inspecting 500 steamers and upward, to a salary of $2,500 per year each.

The act further provides that the basis of salaries from the date of approval of the act of March 1, 1895, shall be on the report of inspections for the preceding year, and thereafter according to the number of steamers reported inspected at the end of each fiscal year, which shall regulate the salaries for the following year for each local board, as reported by the Supervising Inspector-General.

Therefore, in accordance with the report of that officer for the fiscal year ended June 30, 1900, the salaries of local inspectors of hulls and local inspectors of boilers from July 1, 1900, to June 30, 1901, inclusive, are hereby established, as follows:

For the districts of Evansville, Ind.; Louisville, Ky.; Memphis, Tenn.; Nashville, Tenn.; Cincinnati, O.; Gallipolis, O.; Wheeling, W. Va.; Burlington, Vt.; Bangor, Me.; Galveston, Tex.; Apalachicola, Fla., and Toledo, O., at the rate of $1,200 per year for each local inspector.

For the districts of New Haven, Conn.; Savannah, Ga.; Charleston, S. C.; Dubuque, Iowa; Pittsburg, Pa.; Portland, Ore.; Superior, (Marquette,) Mich.; Mobile, Ala., and Jacksonville, Fla., at the rate of $1,500 per year for each local inspector.

For the districts of St. Louis, Mo.; Oswego, N. Y.; New London, Conn.; Duluth, Minn.; Portland, Me.; Detroit, Mich., and Providence, R. I., at the rate of $1,800 per year for each local inspector.

For the districts of Puget Sound, (Seattle,) Wash.; Albany, N. Y.; Grand Haven, Mich.; Port Huron, Mich.; Juneau, Alaska.; Milwaukee, Wis.; Cleveland, O.; Chicago, Ill., and Norfolk, Va., at the rate of $2,000 per year for each local inspector.

For the districts of Philadelphia, Pa.; Boston, Mass.; Baltimore, Md.; Buffalo, N. Y.; New Orleans, La., and San Francisco, Cal., at the rate of $2,250 per year for each local inspector.

For the district of New York, N. Y., at the rate of $2,500 per year for each local inspector.

L. J. GAGE, Secretary.

ONTARIO RIVER AND HARBOR WORK.

Finance Minister, of the Dominion of Canada, W. S. Fielding, has announced that the expenditures upon river and harbor works in Ontario during the current fiscal year would be as follows:

Port Burwell, improvements of harbor	$30,000
Port Stanley wharf	8,000
Kingsville, repairs and improvements to wharf and breakwater	15,000
Point Pelee Island, wharf (re-vote)	6,000
Leamington, pier	15,000
Sydenham river, dredging (re-vote)	5,000
Bayfield, extension of piers	5,500
Goderich harbor, re-construction of breakwater, etc. (re-vote)	20,000
Goderich harbor, dredging to complete (re-vote)	11,000
Port Albert, dredging	1,000
Goderich harbor	5,039
Goderich harbor, blasting and removing rocky shoal in vicinity of elevator	4,700
Goderich harbor, repairs to northern entrance pier.	2,100
Depot Harbor breakwater	50,000
Sarnia, dredging	11,250
Port Hope Harbor dredging ($5,000,) repairs to pier ($2,000)	7,000
Lancaster wharf	5,000
Cobourg, repairs to pier and dredging	5,000
Severn and Black rivers, improvements in connection with regulation of waters of Lake Simcoe and Couchiching	2,500
Beaverton, repairs to wharf	1,000
Oshawa, repairs to pier (re-vote $8,000)	10,000
Pickering harbor, repairs to breakwater and dredging	4,000
Toronto harbor, work at eastern entrance (re-vote)	40,000
Toronto harbor, diversion of Don and dredging in the harbor (re-vote)	25,000
Bronte, harbor improvements	5,000
Oakville, repairs to west pier at mouth of harbor, etc	5,000
Burlington channel, repairs to piers (re-vote)	20,000
McGregor's Creek	5,000
Rondeau harbor (repairs $1,500, dredging $3,907)	5,407
Port Elgin, breakwater (re-vote $3,000)	3,000
Port Elgin, dredging	1,500
Kincardine, dredging	2,500
Kincardine, harbor improvements	5,000
Wiarton, landing pier	10,000
Southampton, dredging	2,000
Saugeen River, improvements, etc	5,000
Colpoy's Bay, extension of pier	600
Lion's Head, repairs to pier	1,000
Lion's Head, dredging	1,500
Owen Sound harbor, dredging and extension of pile protection works (re-vote $9,000)	30,000
Oxenden, addition to wharf	4,000
Meaford harbor, dredging and pile work	30,000
Thornbury, repairs to harbor works	1,000
Collingwood harbor, improvement, (re-vote $30,000)	50,000
Barrie, works of re-construction and repairs on public wharves	3,000
Hawkestone, wharf (re-vote $1,500)	2,250
Midland harbor, dredging	3,300
Bruce Mines, wharf (re-vote)	8,000
Providence Bay, wharf (re-vote)	5,000
Sheguindah, landing pier	2,300
Sault Ste. Marie, harbor improvements	10,000
Little Current, north channel improvement	1,000
Port Findlay, wharf (re-vote $2,500)	5,800
Port Arthur, dredging	3,500
Desbarats, to complete wharf	1,000
Hawkesbury, dredging	4,000
North Bay, repairs	2,300
Scugog River, dredging channel (re-vote)	4,000
Fenelon River, piers regulate descent of logs	800

VESSELS CLASSED.

Vessels classed and rated by the American Bureau of Shipping in the Record of Ameriean Foreign Shipping. Screw, City of San Antonia, screw Hudson, three masted schooner Helena, three masted schooner Emily F. Northam, barkentine Hancock.

British schooner Demozelle, and British three masted schooner Benefit.

THE Navy Department has been recommended to purchase the submarine torpedo boat known as the "Improved Holland", the disposition of which was left open by Secretary Long when he bought the "Holland." This order has no effect upon the previous action of the department in deciding to build the five submarine boats provided for in the last act of Congress.

PROPOSALS FOR PATROL BOAT.

The Ohio Fish and Game Commission will receive bids for the construction of a patrol boat for Lake Erie.

Plans and specifications may be had on application to the Secretary of above Commission, Athens, Ohio.

Sealed bids will be received up to 12 o'clock noon, Chittenden Hotel, Columbus, Ohio, September 4th, 1900.

All bids should be mailed to the Secretary Ohio Fish and Game Commission, Chittenden Hotel, Columbus, and any other correspondence to same address, Athens, Ohio.

The Commission reserves the right to reject any or all bids. 32–33

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DAVID CARTER, Manager Detroit & Cleveland Navigation Co., Detroit, Mich.
T. H. NEWMAN, Manager Cleveland & Buffalo Transit Co., Cleveland, Ohio.
SPITZER & CO., Bankers, Spitzer Buuilding, Toledo, Ohio.
F. A FORBES, General Manager Michigan Telephone Co., Detroit, Mich.
JOHN & F. P. GORDON, Traffic and Steamboat Managers, Buffalo, N. Y.
W. L. GUILLEUDEU, Pres. Old Dominion Steamship Co., Pier 26, North River, N. Y.
ALEXANDER McVITTIE, Pres. Detroit Ship Building Co., Detroit, Mich.
Capt. JAMES A. SMITH, Gen. Supt. Old Dominion Steamship Co., Pier 26, North River, N. Y.

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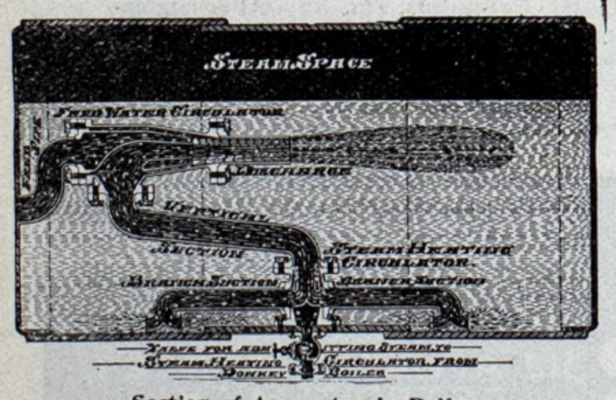

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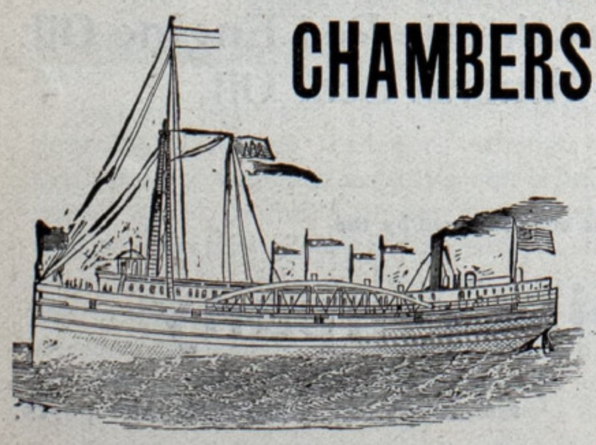

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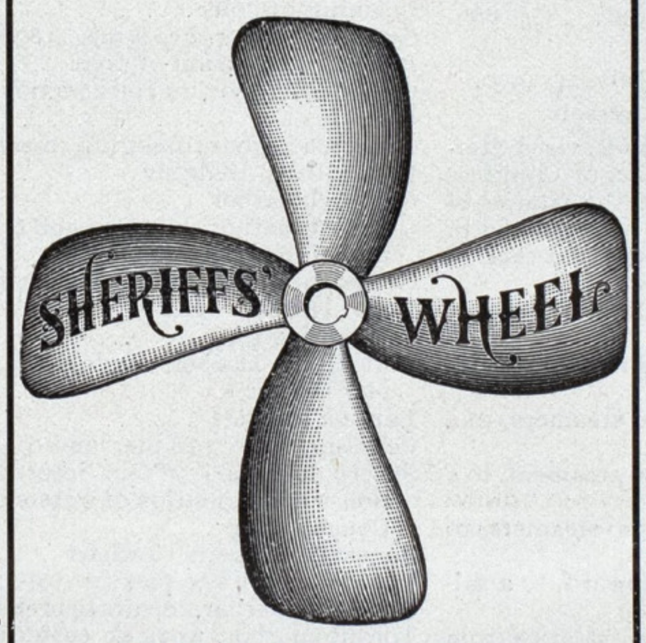

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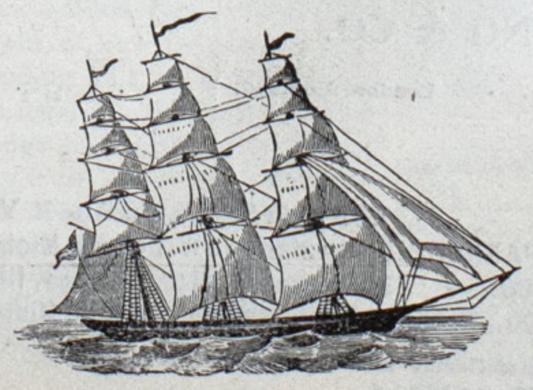

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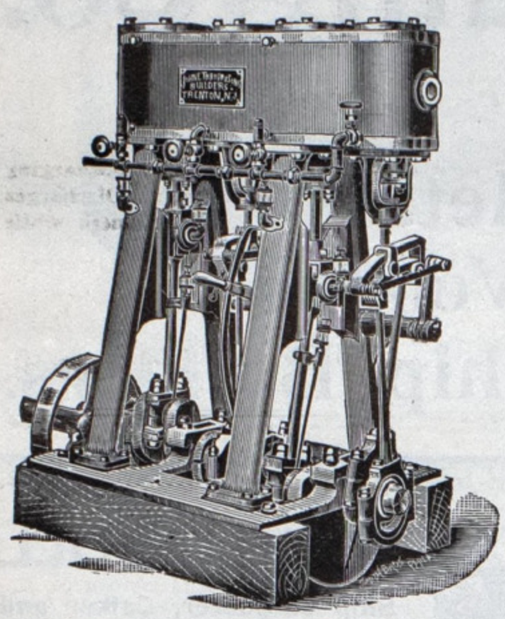

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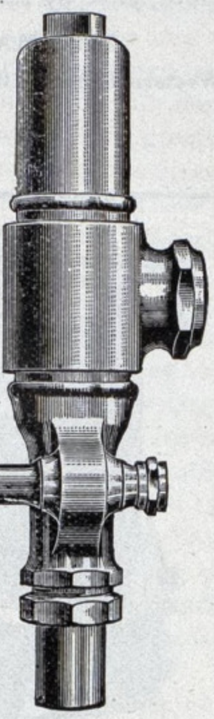

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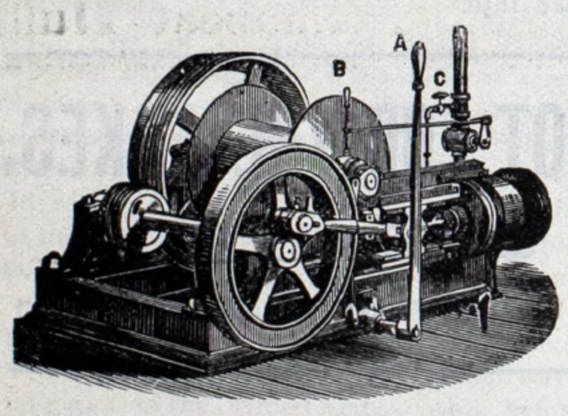

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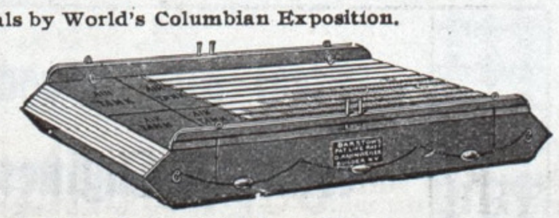

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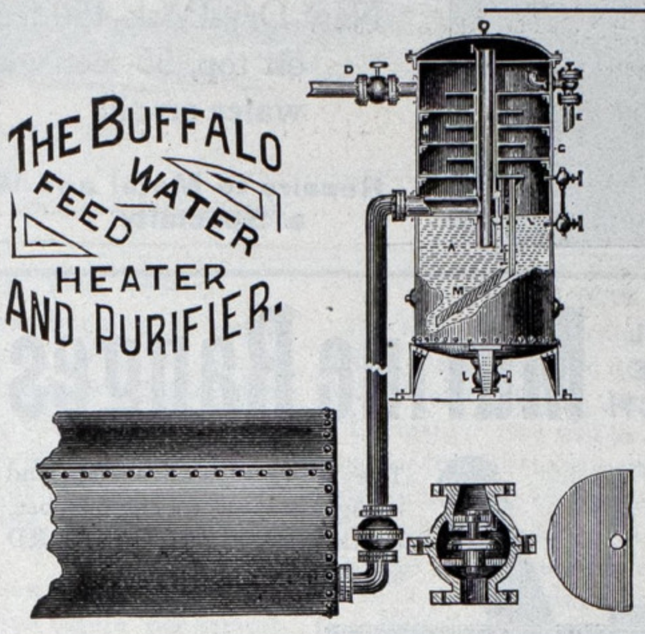

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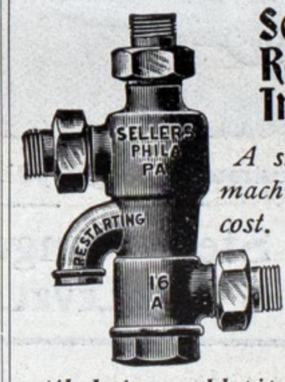

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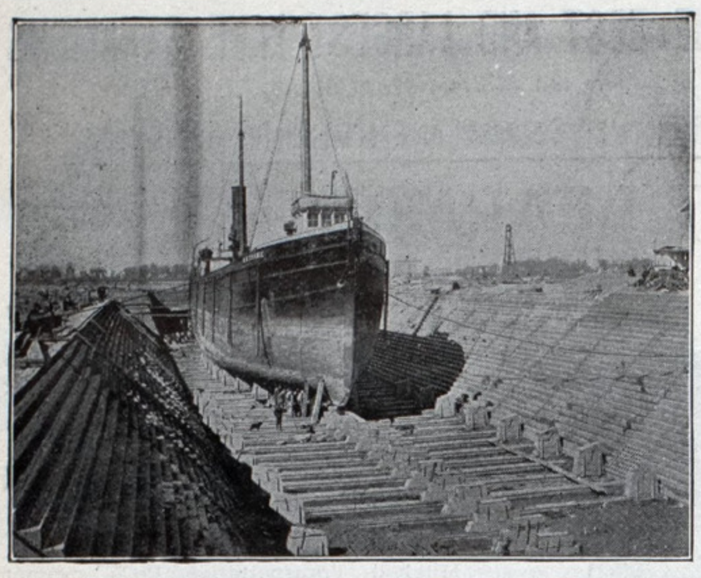

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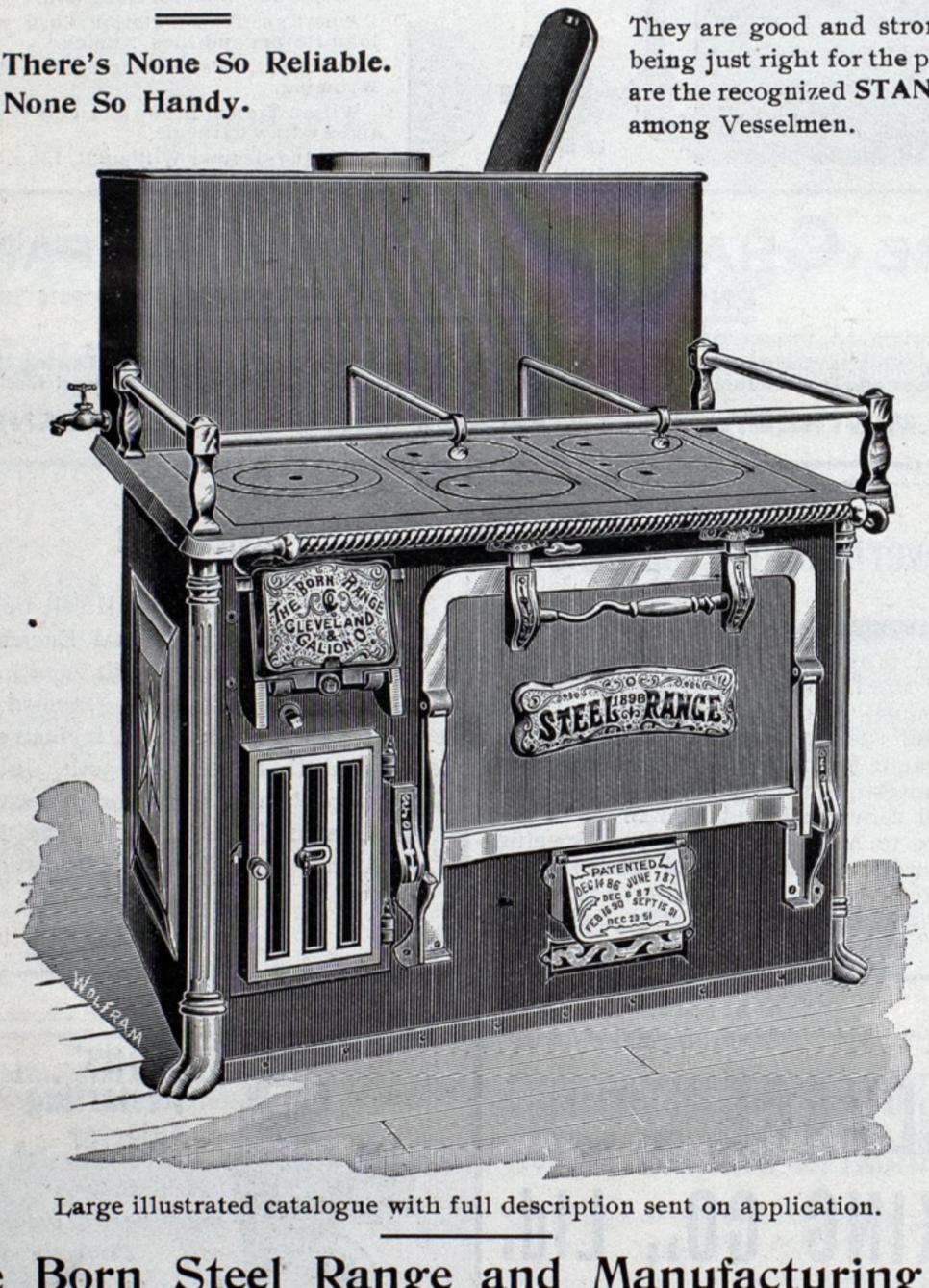

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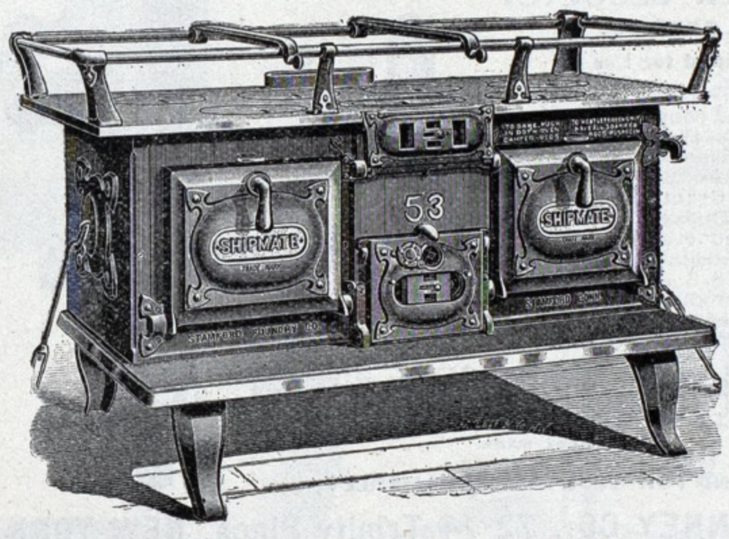

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